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The Monthly Magazine for
Sanyo Personal Computer Users

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T. Kevin Nickols
Submissions Editor Jutta Kapfhammer
Reviews Editor Monica Dorth
Editorial Consultants Tamara Dunn,
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Contributing Editors Fred Blechman,
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Art Director Kevin Quiggins
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Chief of Typography Debbie Hartley
Typography Services
Jody Doyle, Angela Kapfhammer,
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Research Assistants Judy Brashear,
Laurie Falk, Laila Masri, Sharon Smith

Advertising Coordinator Doris Taylor
Advertising Assistant Debbie Baxter
(502) 228-4492

For Soft Sector Advertising and Marketing
office information, see Page 78.

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CONTENTS

FEATURES

- **The Better BASIC Bureau/Philip MacKenzie & Jeff Sorensen**10
Instituting two of Sanyo BASIC's missing keywords
- **Land Of The Cave Bear/Leonard Hyre**28
An Adventure back into time
- Mastering MS-DOS/Danny Humphress**40
Climbing the hierarchal tree
- **Determining Present Value/Robert E. McCoy**44
Learning to invest for future returns
- **BASIC Training/Fred Blechman**48
Continuing our lesson on Sanyo BASIC's graphics
- Have Your Monitor Compatibility And Vertical Interlace, Too!/Ron Tevonian**52
A modification to improve your RGB monitor output
- **DataPlot/Michael Izzi**72
Graphically analyzing data

DEPARTMENTS

- Advertisers Index**78
- Back Issue Order Form**67, 68
- Business Sector/Charlotte & Brian Stone**69
Solutions to your applications problems
- Corrections**67
- Input/Output/Tim Purves**23
Answers to your technical questions
- Letters To The Editor**6
- Racksellers**77
- Reviewing Reviews**76
- Soft Soapbox/Belinda Kirby**8
News and Comments
- Soft Talk**66
New products and services
- Submitting Material**26
- Subscription Information**68
- The First Great Soft Sector One-Liner Contest**25

REVIEWS

- Minute Manual For The Dot Matrix Printer**57
- Oki Font-Do**63
- Prickly-Pear Datapack**61
- Software Golden Oldies**60
- Type Right**56
- Word Perfect 4.0**64

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- The small disk symbols appearing beside features and regular columns indicate that the program listings with those articles are on this month's **SOFT SECTOR ON DISK**, ready to LOAD and RUN. For full details, see the **SOFT SECTOR ON DISK** ad on Page 65.

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LETTERS TO THE EDITOR

PAR
AVION

THE PERFECT PITCH

Editor:

Several of your readers have requested a way to set up their Gemini 10X printer for a desired pitch without having to use *WordStar* or BASIC. Here is a very short program, written using *DEBUG.COM*, that will control a printer from DOS.

From DOS, type *DEBUG* and *ENTER*. At the debug prompt '-' type *N12CPI.COM* and *ENTER*. Then type *A100* and *ENTER*. When 100 appears, type the following (be sure to use the Hex codes for your printer if they differ from the sample). Do not type the numbers 100 through 113, they will appear automatically.

```
100 MOV CX, 8
103 MOV BX, 111
106 MOV DL, [BX]
108 MOV AH, 5
10A INT 21
10C INC BX
10D LOOP 106
10F INT 20
111 db 1B 42 02 1B 59 01 07 07
113 ENTER
```

After entering this, type *RCX ENTER* and 13 *ENTER* when the register ':' prompt appears. Double check your work and type *W* at the *DEBUG* prompt. You will be greeted with "Writing 13 bytes." When the *DEBUG* prompt appears, type *Q* and *ENTER* and you're back in DOS.

A *12CPI.COM* file now exists. Type *12CPI* and *ENTER* and your printer will be shifted into the 12-pitch mode and the internal bell will "chirp" twice to let you know everything is complete. Change the number behind *CX* at offset 100 (above) and change the codes in offset 111 for other printer codes.

Craig D. Veal
APO SF

A PAT ON THE BACK

Editor:

I should like to commend you for an excellent magazine. The following sections deserve special commendation.

Through "Business Sector" I have been able to employ many of the tips that the Stones have mentioned. Their writing is clear, concise, informative and useful. I await their reply on the problems with *CalcStar*.

In "Input/Output," Tim Purves has an interesting style and correct answers. Again, I have found many uses for the information he presents. His usage map in the May '85 issue enabled me to finally locate the video RAM.

Your policy on software review rebuttal is refreshing. Since I read both the review and the rebuttal, I have both sides of the debate. It is most interesting to see the same piece of software from two different angles.

The Sanyo is an excellent microcomputer. In many ways, it is superior to the mainframe I use at work. Your magazine makes it even more enjoyable. I look forward to the June issue.

S.G. Geisel
Fairfax, VA

Editor:

In *SOFT SECTOR* December '84, you ran a review of Michigan Software's *Screen Print* (Page 61). You said, "Buy it." I did, and it turned out to be good advice with only a couple of exceptions.

Although your review claimed that *Screen Print* works with *EasyWriter*, I quickly found that with *Screen Print* installed, *EasyWriter* bombs if a document longer than about a page is being edited. No problem, however. There should be no need to get a screen dump with *EasyWriter*.

A more distressing problem arose when I tried graphics screen dumps to my Radix 10 printer, a Star Micronics printer which is a step above their Gemini. The printout is rotated 90 degrees in this graphics mode, as advertised, but the horizontal dimension (horizontal when the paper is rotated to appear right side up) is compressed causing a distorted representation of shapes, especially circles. Even more disturbing were the chopped off text characters (only a problem when printing sideways in the graphics mode).

There is an easy fix to this distortion problem. I complained to Michigan Software, and their technical staff came right back with instructions that were clear and complete even though I had never used *DEBUG* before.

The problem was with the incremental line feed sent to the Radix. Adjusting it (fine-tuning) amounted to typing *DEBUG SD-GEMIN.COM* (both files must be on the same disk), then *E 06EE* to get at the contents of memory location 06EE, and changing the Hex value of the contents to slightly higher values. Type *W* to write the change on disk, and *Q* to quit. In my case, the value in 06EE needed to be changed from 0C to 10. After the *Screen Print* file has been debugged, reboot the system and re-install the program. Much prettier.

The most important lesson from all this, however, is that Michigan Software knows how to respond to customer inquiries — a rare trait in the business world.

Norman A. Ross
Monroe, ME

NEW FORMATIONS

Editor:

We think *SOFT SECTOR* is "just the ticket" to get our Sanyo's flying high. We want to

thank you personally for the valuable service you provide to all the user groups spread about the country. Please mention OK-SANYO (Ohio/Kentucky) in your letters section in case someone from our area is not aware of us. Anyone interested in OK-SANYO should contact me at 2395 South Main St., 41076; (606) 441-4359.

Keep up the good work!

Eric T. Costello
President OK-SANYO
Highland Hgts., KY

Editor:

We would like to be included in your list of Sanyo user groups. As far as we know, we are the only group in Utah with an affiliation with SNUG.

SOFT SECTOR has been an extremely cohesive force with the Sanyo users. We are committed to support your magazine in whatever way that we can. We appreciate your efforts.

Our club information is: Sanyo Users of Provo Utah Region (S.U.P.U.R.), P.O. Box 556, Provo, Utah 84603, (801) 224-7550.

Thank you for your cooperation.

Lloyd Finlinson
President
Provo, UT

FYI

Editor:

I want to thank you for placing my program *Scripture Memory* in the "Soft Talk" section of your magazine.

However, there are two discrepancies in what you printed that I would like to bring to your attention:

1) The program costs \$25. In order to get the Topical Memory System on disk, it costs an additional \$5. "Soft Talk" indicates both are for \$25.

2) The data is not just available in the New King James Version (NKJV), but also in four others; the King James Version (KJV), the New American Standard (NASB), the Revised Standard Version (RSV) and the New International Version (NIV), thus giving me a much wider market.

Thank you very much for your friendly help.

Bill Branham
Reinbeck, IA

Editor:

I have enjoyed reading SOFT SECTOR since its inception. Your publication certainly has helped many of us Sanyo owners.

In the Article "Putting The Hidden Files Where You Can Find Them," (May '85, Page 47), there is a misleading statement that I believe should be pointed out to your readers. The author stated that once a hidden file is made visible, it can be loaded

into DEBUG. In fact, DEBUG can load any file in the directory, whether it is hidden or visible, so long as you know the filename.

Fat C. Lam
Washington, DC

PATCHING A PATCH

Editor:

I have enjoyed running *Flight Simulator* on my Sanyo ever since I read your article in the May '85 issue of SOFT SECTOR.

However, there were a few things that I had to discover for myself. Perhaps you would like to pass these bits of advice along to your readers in some future issue.

The FLIGHT.COM patch program obtainable on the May issue of SOFT SECTOR ON DISK is inferior to the one you presented in the magazine in both May and July. The disk version provides the flyer with no way to display a "Radar" view nor any way to "Center" the ailerons. The lack of Radar is a serious handicap! The disk version simply omits 14 vital bytes of the machine language program! These correspond to 28 Hex characters starting with 3C3375 at the

Continued on page 76



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SOFT SOAPBOX

In this, the second month of our second year, we begin by saying goodbye to the person who has lent his creativity and innovative ideas to this publication and has helped establish it as *the* magazine for Sanyo personal computer users.

Kevin Nickols, former managing editor of SOFT SECTOR, has moved on to take charge of a new FPSS, Ag. publication, *VCR, The Home Video Monthly*. This magazine is geared toward home viewers who use their video recorder as an entertainment appliance instead of an electronic gadget. The focus will be on programming — the software side of the industry. Readers can turn to *VCR* for information on what's new on tape and disc, what's becoming available and what's worth watching on the networks and cable. Although Kevin will be busy, he will offer his technical and editorial expertise from time to time by serving as a consulting editor to SOFT SECTOR.

It is time now to introduce myself, Belinda Kirby, as SOFT SECTOR's new managing editor. You may have noticed that I have been serving as the associate editor over the past months. This has provided me with the experience to assume this position. I am well aware, as I'm sure you are, that I have "big shoes to fill." However, with your continued support and interest in SOFT SECTOR — and hard work on my part — I will continue to bring you the quality publication that you've come to expect each month.

If you'll remember, in the August "Soft Soapbox," there was mention of a question and answer column which will be written by those in charge at Sanyo Business Systems Corp. For those who have sent in questions which you would have liked to have answered by Sanyo, you can rest assured that they have been forwarded to Sanyo in New Jersey and you can look for the answer to your question in a future issue of SOFT SECTOR.

Another point I would like to address is that we have received several letters from readers requesting support for the Sanyo CP/M eight-bit machines. I would like to emphasize, however, that we are designed specifically for the Sanyo MS-DOS, 16-bit computers and have no plans to start coverage of the eight-bit machines. Thoroughness is our main objective and we can only do that by concentrating on a specific portion of the Sanyo market.

A sincere thank you is due to those of you who share your helpful hints with us and to those of you who discover ways to enhance the programs found in SOFT SECTOR. Please continue to help us grow and learn as we hope we help you.

The goals of SOFT SECTOR in its second year are the same as in its first; to provide you, the user, with top-quality software, unparalleled services and benefits, honest and thorough product reviews and support for those who made the wise decision to purchase a Sanyo computer.

In closing, I would like to take this time to remind you that the first year of SOFT SECTOR has passed and it's time for you charter subscribers to renew your subscriptions so you won't miss out on any of the information found in the pages of SOFT SECTOR.

— Belinda Kirby

Can You Name a Dual-Drive Color PC That Runs Lotus 1, 2, 3 and Costs Under \$1500?



Hints

- It comes with a 14" RGB monitor much like the 14" monitor that comes with the \$2495 Leading Edge ® PC.
- It has dual 800K disk drives much like the \$2495 Tandy 2000, but it also has the ability to read and write to popular 160K, 320K IBM-PC formats.
- It's an 8088, MS-DOS system with 256K of RAM, but it comes with a better free software bundle than the 8-bit Kaypro including MS-DOS 2.11, HAGEN-DOS, DOS-TUTOR, Word-Star 3.3, EasyWriter, Spell, Mail Track, PC File III, FILEBASE, CalcStar, games, graphics, utilities, and two BASIC languages.

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What can you do about command words that are reserved in BASIC but don't do anything? (Who you gonna call?) . . .

The Better BASIC Bureau

By Philip MacKenzie
and Jeff Sorensen

“Hello? Better BASIC Bureau? I'd like to report some missing keywords . . .”

This is the kind of problem for which the Better BASIC Bureau was formed. Everyone wants accurate information, especially those who own out-of-the-mainstream computers like the Sanyo MBC-550/555.

All Sanyo owners know that the BASIC inside their computer has incredible power, but they need to know exactly what kind of power, and how to use it. This is why it is sometimes aggravating to study the *Sanyo BASIC Reference Manual* and the *Sanyo Operator's Guide*. These manuals are not bad, but there are omissions and inaccuracies which are frustrating. When we were comparing the reserved word lists in both of these manuals, we noticed peculiar differences. The following keywords appear in the BASIC manual, but not in the user's guide:

ATTR\$ DSKF EDIT HCOPI

However, both DATE\$ and SCREEN appear in the user's guide but not in the BASIC Manual. The BASIC manual

(Philip MacKenzie and Jeff Sorensen are widely recognized in the Sanyo world for their machine language games. Philip is currently studying mathematics at the University of Michigan and Jeff is studying computer and systems engineering at Rensselaer Polytechnic Institute.)

lists “REN” as a reserved word; it is not. Rather, this is a typo for the BASIC REM command. Concentrating on the more “extensive” list in the BASIC manual, all we need to do is add the forgotten DATE\$ and SCREEN commands to the list — could it be that easy?

The answer is “no,” for there are several other reserved words that have been omitted from *both* of these lists! Consider the following list of undocumented keywords:

CREATE CONSOLE SETKEY STICK
STRIG SOUND PLAY

The following keywords are listed in both manuals, but not explained:

INIT CSRLIN COM SUB

The first thing you should do is round up all the undocumented reserved words and write them into your manuals. The question that comes to mind is what, if anything, do these commands do? Are they just a mysterious nuisance, or do they actually serve a purpose?

Many of these commands sound very tempting, for example; SOUND or SCREEN. To satisfy our curiosity, we made a list of what each of these commands do, starting with the only documented one:

DATE\$ — Explained in the *Sanyo BASIC Reference Manual* Page 4-15 and used to access and change the system's date.



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The rest of the commands are not documented. First, the disappointments:

ATTR\$, COM, — All jump to a
CONSOLE, CREATE, very powerful
CSRLIN, DSKF, EDIT routine that
HCOPY, SETKEY, displays error
STRIG, SUB messages;
specifically, a
"Syntax Error."

SOUND, PLAY, — Will be passed
SCREEN over, along with all
their parameters.
Obviously a bid from
Sanyo to be IBM
compatible.

Need an example? Try this program:

```
10 SCREEN=50
20 PRINT SCREEN
```

A syntax error is guaranteed in Line 20.

For the more enticing commands, type:

INIT — involved with manipulating the RS-232 port. Could be handy. We don't own an RS-232 card and thus are not sure what this does, but here are the values and formats it accepts:

INIT — The %1 is required. (why?)
%1,X,Y X can be an integer from
64 to 255.
Y can range from zero to five.

STICK — reads the joystick.

Example:

```
10 PRINT STICK(1),STICK(2)
20 GOTO 10
```

A very nice feature — too bad nobody ever was told about it!

But what can be done with the commands that "don't work"? Can BASIC be modified to make them function in a useful manner? This would not be much of an article if the answer were "no." One of the most missed features of Sanyo BASIC we hear about is its lack of SOUND and music instructions. Therefore, to demonstrate how BASIC can be enhanced, we have chosen to make the SOUND and PLAY commands function as their name suggests.

About The Program

Listing 1 is the BASIC program which POKEs in the machine language SOUND and PLAY routines. There is not much to see in that program since it just POKEs in values, so Listing 3 is provided, which is the documented assembly language listing which corresponds to the values which are POKEd in. Part of this program was put into an unused area in Sanyo BASIC. This area was the location of the unused and unusable function keys 11 through 20. The rest was put into the machine language field in high memory. Function keys 11 through 20 will no longer appear with

"One of the most missed features of Sanyo BASIC we hear about is its lack of SOUND and music instructions."

the KEY LIST and will not be changeable using the KEY command.

Listing 1 should be typed in and SAVED immediately. Be sure to check the data twice before the program is run. If there is even one error in the data, the computer might lock up or destroy a program in memory. After the program is run, BASIC will return with "Ready." Now the sound routines are in. The commands have these formats:

SOUND X,Y<,Z> X is the duration
(0 through 255)
Y is the frequency
(0 through 255)
Z is an optional
value for timbre
(0 through 9)

PLAY A\$ or PLAY
"A#BBBCBT305ABCD8"

The PLAY string is a series of letters followed by optional numbers. Spaces

are not permitted. The acceptable letters are:

A-G	→ A note	(see note and the rest of the specifications below)
R	→ A rest	
T	→ Timbre	(T0 loud full tone — T9 soft reedy tone)
S	→ Staccato	(S0 least staccato — S9 most staccato)
Q	→ Speed	(Q0 quickest — Q9 slowest)
O	→ Octave	(O0 lowest octave — O9 highest octave)

T, S, Q and O will all default to 5 if their number is omitted. This is the initial value of each.

Notes can be sharp or flat. To indicate this, a sharp symbol (+ or #), or a flat symbol (-), should be inserted directly after the note and before the number.

Notes and rests use a different code for the numbers following them. Omission of the number results in a whole note (or whole rest). The digits 0 through 9 correspond to the following types of notes:

0 — Quarter note	5 — Dotted quarter note
1 — Dotted half note	6 — Sixteenth note
2 — Half note	7 — 1/24th note
3 — Eighth note triplet	8 — Eighth note
4 — Quarter note	9 — Dotted eighth note

Applications

A vast new world becomes apparent as the Sanyo blows its horn. BASIC programs can have hassle-free sound effects as well as stunning music.

Sound effects are easy to accomplish. Probably the best way to make them is to use short durations with the SOUND command, or use Q0 with the PLAY command.

The other application is music. To demonstrate certain techniques of music making, we have included Listing 2 which plays three classic songs using various methods of string handling.

Here are some notes for all of the computer composers:

PLAY "QOST" resets all special features to their original value.

PLAY "03T2C8" gives you a familiar tone.

CS:998H

This is the vector table for the BASIC commands. It contains two-byte addresses to locations in BASIC.

You'll probably want to examine how the BASIC routines work before you start writing your own. The best way to do this is with DEBUG. Certain subroutines, such as the ones documented in our assembly language code, can be very useful and sometimes essential.

For All The Sanyo Hackers

It is very easy to change Sanyo BASIC if you know the right memory locations and formulas. We will give out the main ones which will let you do almost anything you want to the commands and command list. Here are the two main locations:

CS:A0F9H This is the BASIC command list. It contains all the BASIC keywords and their special codes. The code for a keyword is listed directly after that keyword. (For BASIC 1.21, the location is slightly higher in new versions.)

The only thing left to know is the formula for converting the special BASIC codes to the location in the vector table. This will only apply to commands which have one-byte codes. Keywords which have FFH as the first code are functions and not handled by this formula. Keywords which have FEH as the first code are not tokenized and thus are not reserved words. Here is the formula:

LOCATION = 998H +
(Code - 83H) * 2

You might notice that the commands SOUND and PLAY work very much like the LOCATE and FILES commands already in BASIC. In fact, the subroutines for our new commands were taken directly from the LOCATE and FILES routines. This is the easiest way to make new commands.

Be careful! Fooling around with a complex program like Sanyo BASIC can be very dangerous. Take all necessary precautions, such as saving programs frequently, and opening the disk drive door when the drive is not in use.

Listing 1: INSTALL.BAS

```
5 REM Program copyright 1985 by Philip MacKenzie and Jeffrey Sorensen
10 CLS : LOCATE 10,1,0
20 PRINT TAB(28)"Sound/Play Command Module"
30 PRINT
40 PRINT TAB(28)"Version 2.3 by JS/PM"
50 LOCATE 15,36,0:PRINT "Loading.";
60 CLEAR 32:DEFINT I
70 DEF FNGAD(X)=PEEK(X)+256*PEEK(X+1)
74 REM *
75 REM poke in a machine language routine to get
76 REM the code segment of Sanyo Basic and call it.
80 GOSUB 500:DEF USR(I)=0:CS=USR(I)
90 DEF SEG=CS
94 REM *
95 REM find locations of special routines needed to get
96 REM the numbers and strings out of the SOUND and PLAY statements
100 FILPOS=FNGAD(&H9C8):LOCPOS=FNGAD(&H9EC)
110 GETNUM1=FNGAD(LOCPOS+1)+LOCPOS+3
120 GETNUM2=FNGAD(LOCPOS+18)+LOCPOS+20
130 GETSTR=FNGAD(FILPOS+19)+FILPOS+21
140 ADR(0)=SEG(4):ADR(1)=GETNUM1:ADR(2)=GETNUM2:ADR(3)=GETSTR
144 REM *
145 REM poke in the main SOUND/PLAY routine
150 GOSUB 500
160 LOCATE 15,36,0:PRINT SPC(8)
170 END
496 REM *
497 REM subroutine which pokes data into memory
498 REM A=segment, B$=location, C$=data to be poked
499 REM ADDR=current location, VA=current data to be poked
500 READ A:IF A=-1 THEN RETURN
510 IF A=0 THEN DEF SEG=CS ELSE DEF SEG=SEG(A)
520 READ B$,C$
530 I=INSTR(C$," "):IF I THEN C$=LEFT$(C$,I-1)+MID$(C$,I+1):GOTO 530
540 FOR I=0 TO LEN(C$)/2-1
```



```

550 ADDR=VAL("&H"+B$)+I
560 A=ASC(MID$(C$,I*2+1))
570 IF A<>42 AND A<>64 THEN VA=VAL("&H"+MID$(C$,I*2+1,2)):GOTO 610
580 V1=VAL(MID$(C$,I*2+2,1)):VA=ADR(INT(V1/2)):V1=V1 AND 1
590 IF A=64 THEN VA=VA-(ADDR+2-V1)
600 IF V1 THEN VA=INT(VA/256) ELSE VA=VA-INT(VA/256)*256
610 POKE ADDR,VA: NEXT I: GOTO 500
997 REM *
998 REM this is the data to be poked
999 REM be careful when typing this in!
1000 DATA 4,000, 8BF4 368B 4402 8907 CB
1010 DATA -1
1020 DATA 0,A00, BB00 E900
1030 DATA 0,0BB, E802 @372 26
1040 DATA 0,0C0, 8AC8 E804 @572 1F8A E8E8 1D08 740C E804
1050 DATA 0,0D0, @572 1350 E827 0858 EB02 32C0 9A39 00*0
1060 DATA 0,0E0, *10A C075 01C3 E9F7 03E8 FD07 74F8 E806
1070 DATA 0,0F0, @756 571E 8B0E 7801 C536 7A01 9A81 00*0
1080 DATA 0,100, *11F 5F5E EBDB
1090 DATA 4,000, FF2B BF7F 1540 6010 0B20 3037 989C 87FF
1100 DATA 4,010, FF11 E42F CBC8 BFDB AAAC 8F00 80A1 F144
1110 DATA 4,020, D7C8 BF04 B544 A19C 87D0 7811 E42F CB04
1120 DATA 4,030, B5DB AA37 9805 0703 058A F932 DB8A C8FE
1130 DATA 4,040, C18A C532 E405 0300 B508 E801 00CB 568B
1140 DATA 4,050, D0D3 E840 2BD0 96B0 15FA 8AE5 E63A 32C4
1150 DATA 4,060, 8BCE E2FE 8BCE E2FE 8BCE D1E9 D1E9 412B
1160 DATA 4,070, D987 F273 E7FB B015 E63A 5E32 C0C3 B005
1170 DATA 4,080, CBBF 3500 8A1C 80EB 417C F332 FF8B C3D1

```

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```

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1190 DATA 4,0A0, 1E80 FD23 7411 80FD 2B74 0C80 FD2D 750F
1200 DATA 4,0B0, 2E8B 970B 00EB 052E 8B97 2700 46EB D880
1210 DATA 4,0C0, ED2F 7EBA 80FD 0A76 054E FEC1 32ED 3C06
1220 DATA 4,0D0, 7704 B308 EB07 8AD8 80EB 1175 3C51 2E8A
1230 DATA 4,0E0, 4D01 D3EA 2E8A 0D86 EB32 E42E 8A87 0000
1240 DATA 4,0F0, F6E1 D1E0 D1E0 D1E0 D1E0 2E8A 4D02 8BD8
1250 DATA 4,100, 8BC2 E849 FF32 C92E 8A6D 03E2 FE59 46FE
1260 DATA 4,110, C974 03E9 6BFF 32C0 CB0A ED75 02B5 053C
1270 DATA 4,120, 1375 0D80 ED02 7F02 B501 2E88 6D02 32ED
1280 DATA 4,130, 3C12 7506 2E88 6D03 32ED 3C10 7505 2E88
1290 DATA 4,140, 2D32 ED3C 0E75 0980 C502 2E88 6D01 32ED
1300 DATA 4,150, 0AED 74BA E927 FF
1310 DATA 1,18F, 0A
1320 DATA -1

```

Listing 2: MUSIC.BAS

```

10 CLS
20 LOCATE 10,21,0
30 PRINT "Songs using the PLAY routine by JS/PM"
40 LOCATE 11,28,0
50 PRINT "Please make a selection:"
60 LOCATE 13,30,0
70 PRINT "1 - The Entertainer"
80 LOCATE 14,31,0
90 PRINT "2 - Maple Leaf Rag"
100 LOCATE 15,27,0
110 PRINT "3 - Flight of the Bumblebee"
120 A$=INKEY$:IF A$="" THEN 120
130 ON VAL(A$) GOTO 1000,2000,3000
160 GOTO 120
999 REM The Entertainer
1000 A$="T903D6D#6E604C803E604C803E604C5"
1010 B$="T804C6T7D6T6D#6T5E6C6D6E803B604D8C5"
1020 C$="T803A6T7G6T6F#6T5A604C6E8D6C603A604D5"
1030 D$="T504C6D6E6C6D6E8C6D6C6E6C6D6E8C6D6C6E6C6D6E803B604D8C5"
1040 PLAY "S9Q8"+A$+B$+A$+C$
1050 PLAY A$+B$+D$+"O3T6C8"
1060 GOTO 120
1999 REM Maple Leaf Rag
2000 DEFSTR D:DEF FND(X)=MID$(STR$(X),2,1)
2010 DEF FNDA(X)="T"+FND(8-X)+"O"+FND(X)+"A-6O"+FND(X+1)+"A-6O"+FND(X+2)+"C-6A-6"
2020 A$=FNDA(1)+FNDA(2)+FNDA(3)+FNDA(4)
2030 E$="A-8A-8A-8A-6A-8"
2040 F$="E-6F6C6E-6F6R6O5A-8B-6O6C-6O5A-6B-6O6C6R6"
2050 G$="O5A-6O6C6O5A-6S9B-8A-8"
2060 PLAY "S5Q8"+A$+E$+F$+G$
2070 GOTO 120
2999 REM Flight of the Bumblebee
3000 DEF FNO$(X)="O"+MID$(STR$(X),2,1)
3010 PLAY "S2Q3T6"
3020 X=5:PLAY FNO$(X)
3030 A$="E8E-8D8D-8C8F8E8E-8E8E-8D8D-8C8D-8D8E-8"
3040 B$="A8A-8G8G-8F8B-8A8A-8A8A-8G8G-8F8G-8G8A-8"
3050 C$="E8E-8":D$="F8E8"
3060 E$=C$+C$+C$+"D8E-8E8"+D$+D$+D$+"E-8"
3070 F$="E8E-8E8F8G-8G8A-8G8G-8F8"
3080 G$="A8A-8":H$="B-8A8"

```


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Why MichTron is number 1 is no ancient secret!


```

3090 I$=G$+G$+G$+"G8A-8A8"+H$+H$+H$+"A-8"
3100 J$="A8A-8A8B-8"+FNO$(X+1)+"C-8C8D-8C8C-8"+FNO$(X)+"B-8"
3110 K$="E8E-8E8G-8G8G-8G8A8B8B-8B8"+FNO$(X+1)+"E-8E8E-8E8G-8G8G-8"
3120 L$="E8E-8E8G-8G8E8G-8G8A8G8A8B8B#8A8B8B-8B8"+FNO$(X+2)
3130 M$="C8D-8D8E-8"+FNO$(X+1)+"B8"+FNO$(X+2)+"D-8E-8E8D8C8"+FNO$(X+1)
3140 N$="B8"+FNO$(X+2)+"D8C8"+FNO$(X+1)+"B8A8B8A8G8G-8A8G8G-8E8E-8E8"
3150 P$="B8B#8A8B8A8G8G-8A8G8G-8E8E-8E8G-8G8G-8G8A8B8B-8B8"+FNO$(X+2)
3160 Q$="D-8E8"+FNO$(X+1)+"B8"+FNO$(X+2)+"D-8E-8"
3170 FOR L=1 TO 2
3180 PLAY A$+A$+A$+"E8A88"
3190 PLAY B$+B$+B$+"A8"+FNO$(X+1)+"D"+FNO$(X)
3200 PLAY E$+E$
3210 PLAY "E8F8"+F$+F$
3220 PLAY I$+I$
3230 PLAY "A8B-8"+J$+J$+"B8"
3240 PLAY "T9":NEXT L
3250 PLAY "T8"
3260 FOR L=1 TO 2
3270 PLAY K$+L$+M$:PLAY N$+P$+Q$
3280 NEXT L
3290 PLAY "E"
3300 GOTO 120

```

PAGE 50,132

```

; Machine language routines for extensions to Sanyo Basic's
; SOUND and PLAY commands
; --- Copyright Phil MacKenzie and Jeff Sorensen
;
; The first part of this program (up to the ORG 0) is to be poked
; into Sanyo Basic segment. The second part (after the ORG 0)
; is to be poked into the machine language area designated by seq(4)

```

```

Ø17A
Ø17A  ØØ ØØ ØØ ØØ
                                H17A  ORG  17AH
                                DD      Ø
                                ;LDS instruction needs this

```

00BB		ORG	0BBH	
00BB	E8 63B8 R	SOUND:	CALL	H63B8
00BE	72 26		JC	ERRT
00C0	8A C8		MOV	CL,AL
00C2	E8 63AD R		CALL	H63AD
00C5	72 1F		JC	ERRT
00C7	8A E8		MOV	CH,AL
00C9	E8 08E9 R		CALL	H8E9
00CC	74 0C		JZ	SOUND2
00CE	E8 63AD R		CALL	H63AD
00D1	72 13		JC	ERRT
00D3	50		PUSH	AX
00D4	E8 08FE R		CALL	H8FE
00D7	58		POP	AX
00D8	EB 02		JMP	SHORT SOUND3
00DA	32 C0	SOUND2:	XOR	AL,AL

;63B8H is the Basic routine to
 ;get the first number in the
 ;SOUND command (save in CL)
 ;63ADH is the Basic routine to
 ;get numbers after commas
 ;save in CH
 ;8E9H is the Basic routine which
 ;checks for more data
 ;if more data, get next number
 ;Carry flag means error!
 ;8FEH is the Basic routine which
 ;causes an error if extra data
 ;default AL


```

;when calling SOUNDU, CL=length, CH=tone, AL=timbre (or loudness)
00DC 9A 0039 ---- R      SOUND3: CALL    FAR PTR SOUNDU

00E1 0A C0              GOBACK: OR      AL,AL      ;After returning, if AL<>0
00E3 75 01              JNE      ERRT      ;then error!
00E5 C3                RET              ;otherwise return
00E6 E9 04E0 R          ERRT:  JMP      H4E0      ;4E0H is the error routine AL=err code

00E9 E8 08E9 R          PLAY:  CALL    H8E9      ;check for more data
00EC 74 F8              JZ       ERRT      ;if none then error
00EE E8 9415 R          CALL    H9415      ;9415H is the Basic routine which
                                      ;gets a string
00F1 56                PUSH     SI          ;Save important registers
00F2 57                PUSH     DI
00F3 1E                PUSH     DS
00F4 2E: 8B 0E 0178      MOV      CX,CS:[178H]      ;CX is the string length
00F9 C5 36 017A R        LDS      SI,H17A      ;DS:SI is the string location
00FD 9A 0081 ---- R      CALL    FAR PTR PLAYA
0102 1F                POP      DS          ;Get back important registers
0103 5F                POP      DI
0104 5E                POP      SI
0105 EB DA              JMP      SHORT GOBACK      ;check for errors

0000 ;This section to be poked in high memory'
      ORG      0
0000 FF 2B BF 7F 15 40   ;note lengths
      DB      255,43,191,127,21,64,96,16,11,32,48
      DB      60 10 0B 20 30

000B 9837 879C FFFF E411 ;note frequencies
      CB2F BFC8 AADB      FLAT      DW      38967,34716,65535,58385,52015,49096,43739
0019 8FAC 8000 F1A1 D744
      BFC8 B504 A144      NOTE      DW      36780,32768,61857,55108,49096,46340,41284
0027 879C 78D0 E411 CB2F
      B504 AADB 9837      AUGMENT  DW      34716,30928,58385,52015,46340,43739,38967

0035 05                ;variables for speed, octave, timbre, and staccato
0036 07                SPEED     DB      5
0037 03                OCTAVE    DB      7
0038 05                TIMBRE    DB      3
      STACC      DB      5

0039
003B 32 DB              SOUNDU   PROC      FAR
003D 8A C8              XOR      BL,BL
003F FE C1              MOV      CL,AL
0041 8A C5              INC      CL
0043 32 E4              MOV      AL,CH      ;move timbre+1 into CL
      XOR      AH,AH

0045 05 0003            ADD      AX,3
0048 B5 08              MOV      CH,00001000B      ;move tone+3 into AX
004A E8 004E R          CALL    ZOUND1
004D CB                RET              ;ZOUND1 is the sound generating
004E                      SOUNDU   ENDP      ;routine

004E 56                ZOUND1:  PUSH     SI          ;save SI
004F 8B D0              MOV      DX,AX
0051 D3 E8              SHR      AX,CL
0053 40                INC      AX
0054 2B D0              SUB      DX,AX
0056 96                XCHG     SI,AX      ;adjusted for timbre: DX+AX=tone
0057 B0 15              MOV      AL,15H
0059 FA                CLI
005A 8A E5              MOV      AH,CH
005C E6 3A              OUT      3AH,AL      ;clear interrupts for smooth sound
005E 32 C4              XOR      AL,AH      ;toggle TxD bit to generate sound
0060 8B CE              MOV      CX,SI
0062 E2 FE              LOOP    ZOUNW      ;delay loops
0064 8B CE              MOV      CX,SI
0066 E2 FE              LOOP    ZOUNW1
0068 8B CE              MOV      CX,SI
006A D1 E9              SHR      CX,1

```


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006C	D1 E9	SHR	CX,1	
006E	41	INC	CX	
006F	2B D9	SUB	BX,CX	;subtract length/4
0071	87 F2	XCHG	SI,DX	
0073	73 E7	JNC	ZOUNL	;until end of note
0075	FB	ZOUNDA: STI		;then turn on interrupts
0076	B0 15	MOV	AL,15H	;reset the TxD bit
0078	E6 3A	OUT	3AH,AL	
007A	5E	POP	SI	;get back SI
007B	32 C0	XOR	AL,AL	;tell main program: no errors
007D	C3	RET		;return
007E		PLAYER PROC	FAR	
007E	B0 05	ERROR: MOV	AL,5	;5 is an Illegal Function Call
0080	CB	RET		
;start of PLAY routine				
0081	BF 0035 R	PLAYA: MOV	DI,OFFSET SPEED	
0084	8A 1C	MOV	BL,[SI]	;get character in string
0086	80 EB 41	SUB	BL,'A'	;so A=0,B=1,C=2,...
0089	7C F3	JL	ERROR	;if less than A, error
008B	32 FF	XOR	BH,BH	
008D	8B C3	MOV	AX,BX	;move BL into AL
008F	D1 E3	SHL	BX,1	;to get note frequency word
0091	2E: 8B 97 0019 R	MOV	DX,CS:NOTE[BX]	;put frequency in DX
0096	46	INC	SI	;next character
0097	FE C9	PLAYB: DEC	CL	;dec length counter
0099	74 2F	JE	ONUM1	;if equal, do last job
009B	8A 2C	MOV	CH,[SI]	;otherwise check for sharp or flat
009D	3C 06	CMP	AL,'G'-'A'	;if not a note, go on
009F	77 1E	JA	ONUM	
00A1	80 FD 23	CMP	CH,'#'	;sharp
00A4	74 11	JE	SHARP	
00A6	80 FD 2B	CMP	CH,'+'	
00A9	74 0C	JE	SHARP	
00AB	80 FD 2D	CMP	CH,'-'	;flat
00AE	75 0F	JNE	ONUM	
00B0	2E: 8B 97 000B R	MOV	DX,CS:FLAT[BX]	;put flat frequency in DX
00B5	EB 05	JMP	SHORT PLAYC	
00B7	2E: 8B 97 0027 R	SHARP: MOV	DX,CS:AUGMENT[BX]	;put sharp frequency in DX
00BC	46	PLAYC: INC	SI	;goto next char in string
00BD	EB D8	JMP	SHORT PLAYB	
00BF	80 ED 2F	ONUM: SUB	CH,'0'-1	;if number is <0 then error
00C2	7E BA	JLE	ERROR	
00C4	80 FD 0A	CMP	CH,10	;if CH>10 then its irrelevant
00C7	76 05	JBE	PLAYD	
00C9	4E	DEC	SI	;want to check this character again
00CA	FE C1	ONUM1: INC	CL	;correct length
00CC	32 ED	XOR	CH,CH	;set CH back to 0
00CE	3C 06	PLAYD: CMP	AL,'G'-'A'	;again, check if note
00D0	77 04	JA	PLAYE	;if not, check for other control value
00D2	B3 08	MOV	BL,00001000B	;otherwise play the note
00D4	EB 07	JMP	SHORT FIGNOTE	
00D6	8A D8	PLAYE: MOV	BL,AL	
00D8	80 EB 11	SUB	BL,'R'-'A'	;check if rest
00DB	75 3C	JNE	PLAYF	;if so do sound, but don't toggle TxD
/0DD		FIGNOTE:		;set up registers to call ZOUND1
00DD	51	PUSH	CX	;save CX (length of string)
00DE	2E: 8A 4D 01	MOV	CL,CS:[DI+1]	;OCTAVE
00E2	D3 EA	SHR	DX,CL	;frequency divided by 2 for every octave
00E4	2E: 8A 0D	MOV	CL,CS:[DI]	;SPEED
00E7	86 EB	XCHG	CH,BL	
00E9	32 E4	XOR	AH,AH	
00EB	2E: 8A 87 0000 R	MOV	AL,CS:TIME[BX]	;get note length
00F0	F6 E1	MUL	CL	;AX=speed * note length
00F2	D1 E0	SHL	AX,1	;time must be longer (*16)
00F4	D1 E0	SHL	AX,1	
00F6	D1 E0	SHL	AX,1	

00F8 D1 E0	SHL	AX,1	
00FA 2E: 8A 4D 02	MOV	CL,CS:[DI+2]	;TIMBRE
00FE 8B D8	MOV	BX,AX	
0100 8B C2	MOV	AX,DX	;AX=frequency,BX=length,CL=timbre
0102 E8 004E R	CALL	ZOUND1	
0105 32 C9	XOR	CL,CL	
0107 2E: 8A 6D 03	MOV	CH,CS:[DI+3]	;STACCATO
010B E2 FE	STAY: LOOP	STAY	;separate notes with loop
010D 59	POP	CX	;get CX (length of string) back
010E 46	PLAYL: INC	SI	;next note
010F FE C9	DEC	CL	;decrease length
0111 74 03	JE	PLAYR	;if end, return
0113 E9 0081 R	JMP	PLAYA	;otherwise, get more
0116 32 C0	PLAYR: XOR	AL,AL	;no errors!
0118 CB	RET		
0119 0A ED	PLAYF: OR	CH,CH	;check for special codes
011B 75 02	JNE	PLAYG	;if CH=0, default =5
011D B5 05	MOV	CH,5	
011F 3C 13	PLAYG: CMP	AL,'T'-'A'	;check for timbre change
0121 75 0D	JNE	PLAYH	
0123 80 ED 02	SUB	CH,2	
0126 7F 02	JG	PLAYG1	
0128 B5 01	MOV	CH,1	
012A 2E: 88 6D 02	PLAYG1: MOV	CS:[DI+2],CH	;TIMBRE
012E 32 ED	XOR	CH,CH	
0130 3C 12	PLAYH: CMP	AL,'S'-'A'	;check for staccato change
0132 75 06	JNE	PLAYI	
0134 2E: 88 6D 03	MOV	CS:[DI+3],CH	;STACCATO
0138 32 ED	XOR	CH,CH	
013A 3C 10	PLAYI: CMP	AL,'Q'-'A'	;check for speed (quickness) change
013C 75 05	JNE	PLAYJ	
013E 2E: 88 2D	MOV	CS:[DI],CH	;SPEED
0141 32 ED	XOR	CH,CH	
0143 3C 0E	PLAYJ: CMP	AL,'O'-'A'	;check for octave change
0145 75 09	JNE	PLAYK	
0147 80 C5 02	ADD	CH,2	
014A 2E: 88 6D 01	MOV	CS:[DI+1],CH	;OCTAVE
014E 32 ED	XOR	CH,CH	
0150 0A ED	PLAYK: OR	CH,CH	;if CH<>0 then letter was wrong
0152 74 BA	JE	PLAYL	
0154 E9 007E R	JMP	ERROR	;thus, error
0157	PLAYER	ENDP	
;These are dummy memory locations which will be routines in Sanyo Basic			
63B8	ORG	63B8H	
63B8 C3	H63B8:	RET	
63AD	ORG	63ADH	
63AD C3	H63AD:	RET	
08E9	ORG	8E9H	
08E9 C3	H8E9:	RET	
08FE	ORG	8FEH	

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08FE	C3	H8FE:	RET
9415		ORG	9415H
9415	C3	H9415:	RET
04E0		ORG	4E0H
04E0	C3	H4E0:	RET
04E1		SOUNDS	ENDS
			END

Segments and groups:

	N a m e	Size	align	combine	class
SOUNDS		9416	PARA	PUBLIC	'CODE'
STACK.		0000	PARA	STACK	'STACK'

Symbols:

	N a m e	Type	Value	Attr	
AUGMENT.		L WORD	0027	SOUNDS	
ERROR.		L NEAR	007E	SOUNDS	
ERRT		L NEAR	00E6	SOUNDS	
FIGNOTE.		L NEAR	00DD	SOUNDS	
FLAT		L WORD	000B	SOUNDS	
GOBACK		L NEAR	00E1	SOUNDS	
H17A		L DWORD	017A	SOUNDS	
H4E0		L NEAR	04E0	SOUNDS	
H63AD.		L NEAR	63AD	SOUNDS	
H63B8.		L NEAR	63B8	SOUNDS	
H8E9		L NEAR	08E9	SOUNDS	
H8FE		L NEAR	08FE	SOUNDS	
H9415.		L NEAR	9415	SOUNDS	
NOTE		L WORD	0019	SOUNDS	
OCTAVE		L BYTE	0036	SOUNDS	
ONUM		L NEAR	00BF	SOUNDS	
ONUM1.		L NEAR	00CA	SOUNDS	
PLAY		L NEAR	00E9	SOUNDS	
PLAYA.		L NEAR	0081	SOUNDS	
PLAYB.		L NEAR	0097	SOUNDS	
PLAYC.		L NEAR	00BC	SOUNDS	
PLAYD.		L NEAR	00CE	SOUNDS	
PLAYE.		L NEAR	00D6	SOUNDS	
PLAYER		F PROC	007E	SOUNDS	Length =00D9
PLAYF.		L NEAR	0119	SOUNDS	
PLAYG.		L NEAR	011F	SOUNDS	
PLAYG1		L NEAR	012A	SOUNDS	
PLAYH.		L NEAR	0130	SOUNDS	
PLAYI.		L NEAR	013A	SOUNDS	
PLAYJ.		L NEAR	0143	SOUNDS	
PLAYK.		L NEAR	0150	SOUNDS	
PLAYL.		L NEAR	010E	SOUNDS	
PLAYR.		L NEAR	0116	SOUNDS	
SHARP.		L NEAR	00B7	SOUNDS	
SOUND.		L NEAR	00BB	SOUNDS	
SOUND2		L NEAR	00DA	SOUNDS	
SOUND3		L NEAR	00DC	SOUNDS	
SOUNDU		F PROC	0039	SOUNDS	Length =0015
SPEED.		L BYTE	0035	SOUNDS	
STACC.		L BYTE	0038	SOUNDS	
STAY		L NEAR	010B	SOUNDS	
TIMBRE		L BYTE	0037	SOUNDS	
TIME		L BYTE	0000	SOUNDS	
ZOUND1		L NEAR	004E	SOUNDS	
ZOUNDA		L NEAR	0075	SOUNDS	
ZOUNL.		L NEAR	005C	SOUNDS	
ZOUNW.		L NEAR	0062	SOUNDS	
ZOUNW1		L NEAR	0066	SOUNDS	

Warning Severe
Errors Errors
0 0

INPUT/OUTPUT

TIM PURVES

Soft Sector Contributing Editor

Q. After reading through the documentation for Sanyo BASIC, it appears that the maximum number of bytes in a random access record is 256. However, it seems that programmers are able to work around this limitation. Is there a way to get more bytes in BASIC, or can I chain two or more records together?

Joseph Brandon
Zionsville, IN

A. Under MS-DOS, the theoretical limit is a record size of 64K, so the only real limit is imposed by the software (BASIC in this case). In IBM or GW-BASIC there is a command switch that allows you to specify the maximum sector size BASIC will support. The format of the switch is as follows:

```
BASIC[A] [filename] [/S:sector size in bytes]
```

Under Sanyo BASIC, the programmer must write his program to treat two or more records as one logical record. Normally, this is done by using two or more GET/PUT statements. The programmer would read the first record in, perform the required operations on that record, update if necessary and read in the next record, continuing until they are done. For example, if the records were blocked two records to one logical record, a simple multiply could calculate which record to read.

```
first_half_record=((record-1)*2)+1  
second_half_record=((record-1)*2)+2
```

```
get 1,first_half_record  
' work on data in first half  
put 1,first_half_record  
get 1,second_half_record  
' work on data in second half  
put 1,second_half_record
```

(Tim Purves is an expert on the Sanyo 550/555 series computers and is an experienced programmer in assembly code, PASCAL, C and BASIC. He is available to answer any technical questions that the readers of SOFT SECTOR might have. All questions should be addressed to SOFT SECTOR, P.O. Box 385, Prospect, Ky. 40059.)

That's the gist of it. If there were three records to each logical record, the multiplier would be three instead of two, and we would have to perform three GET/PUT operations.

Q. Is it necessary to have double-sided drives to install a "Video RAM Board?" I have an MBC-555 with two single-sided drives. I would like the advantages of GW-BASIC and increased IBM compatibility without the added expense of changing to double-sided drives.

Jeff Peffer
Lewisberry, PA

A. The version of MS-DOS 2.11 that comes with the Video RAM Board is on a single-sided disk. It is possible to use and run the video board without double-sided disk drives. Although for compatibility and data exchange, double-sided drives are a *must*. Also, double-sided drives are becoming very inexpensive (a quick look in a current magazine shows double-sided drives selling for \$79). Just think: The first drive I bought cost \$499 and that was a single-sided 40 track!

Q. I've purchased the Video RAM Board utilities disk because it has some utilities on it that I feel are valuable. After much deliberation, I tried the GW-BASIC on my non-video board Sanyo. Much to my surprise, it worked! One problem however: I can't stop a program once it starts to run. The BREAK or CONTROL-BREAK keys do nothing.

Hector Raggi
Coral Gables, FL

A. I used the BASIC from my Compaq months before anyone had even heard of a "Video RAM Board." GW-BASIC will work fine on the non-video board machine (except for graphics). The reason you cannot break out of the program is because the original Sanyo doesn't support the "cntrl_break_vector." GW-BASIC uses this to detect the pressing of the CONTROL and BREAK keys. (To users of DS-DOS Plus 2.11 — this feature is supported in the 1.02 Version.)

Q. Thank you for all the important information that you have provided in your column. I have a list of questions and I would be grateful if you could please answer them.

On pages 5-14 and 5-15 of the Sanyo Operators guide, what do the numbers 27128 and 2764 refer to? What is the difference between "font" and "image?" What is "IPL?"

N. Padmanabhan
London, England

A. The numbers 27128 and 2764 refer to the EPROM in your machine. The 27 is a prefix for a long line of INTEL type ROMs. 2716-27256, the second number tells how many bits are in the ROM. For example, a 2764 has 64K of bits arranged eight bits wide, giving 8K of usable program code space. All of the Sanyos in the United States and the United Kingdom have the 2764 EPROM, while the machines in Japan have 27128 to support the much larger Japanese character set.

The EPROM in the Sanyo contains the images for characters, the keyboard scan codes and the the IPL program. IPL stands for "Initial Program Loader," more commonly known as the "Bootstrap" Loader.

It is the IPL loader's job to prepare the system to load DOS from the floppy. Most commonly, the IPL sets up a few ports and reads one sector from the floppy and passes control to it. The program read in from the floppy is usually smarter and more complex and will load the rest of the operating system into memory. The area defined as "image" is actually a "mirror image" of the ROM duplicated in the address map.

Q. I have MS-DOS 1.25 and would like a CLS command that I can use in a batch file. Could you provide me with one?

Dr. Samuel McGinnis
Manteca, CA

A. This little program is created with DEBUG.

```
A:debug                                ENTER
-e100 b8 02 00 cd 10 cd 20            ENTER
-r cx                                  ENTER
CX 0000                                ENTER
:7                                     ENTER
-nclear.com                            ENTER
-w                                     ENTER
Writing 0007 bytes                     ENTER
-q                                     ENTER
A:                                     ENTER
```

We now have a file named CLEAR.COM on Drive A that can be used in a batch file to clear the screen.

Q. On the Volume program, whenever I use this to change an existing volume label it trashes the disk's FAT table.

A. Over 50 people have written about this one! Delete the Volume program from the disk. The version that Sanyo is giving out was written by Mark Zeiger of Sanyo Business Systems Corp. The problem is not with Mark's program, but is in fact, a bug in MS-DOS 2.11. Sanyo's program looks for an existing volume label on the disk, deletes it and then writes a new one.

The problem is, when MS-DOS deletes a volume label, it wipes out the FAT entries on the first files on the disk. The correct way is to search for an existing volume label and rename it if the disk already has one.

Sanyo's Program

```
if disk_has_a_label
then
delete label.
endif
Write new label.
exit to DOS.
```

Correct Way

```
if no_label_on_disk
then
write new label.
else
rename current label.
endif
exit to DOS.
```

Next month in this column, I will publish a Volume program that works. See you then!

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FREE CATALOG

The First Great soft sector One-Liner Contest

Here we are again with more winners of The First Great SOFT SECTOR One-Liner Contest. The authors of these winning entries will receive a copy of the September edition of SOFT SECTOR ON DISK.

To briefly restate the rules of the contest, begin the program with the number one and end it in a single line. Anything else goes. Entries will be accepted in either Sanyo BASIC or GW-BASIC. Include a printed listing, a title for the program, and a short explanation of what it does. Send it to The First Great SOFT SECTOR One-Liner Contest, P.O. Box 385, Prospect, KY 40059.

★ ★ ★ ★ ★

DIAGONAL

This is a short program to figure the diagonal of a rectangle (or the hypotenuse of a right angle), given the two short sides. I use the program (or a variation) every day in my work as a concrete construction worker for squaring foundations.

It is simplicity in itself to use. You follow the prompts and enter the length of the two sides in feet, inches and sixteenths, separated by a comma. You must convert fractions to sixteenths, so $\frac{3}{8}$ becomes $\frac{6}{16}$, $\frac{1}{2}$ is $\frac{8}{16}$, $\frac{1}{4}$ is $\frac{4}{16}$, etc. If the sides are in even feet, you must enter the commas anyway.

The diagonal (or hypotenuse) is given in feet, inches and sixteenths. There will be a short delay and then it all starts over again.

```
1 CLS:INPUT"HOW WIDE FT., IN., 16THS";A,
B,C:INPUT"HOW LONG FT., IN., 16THS";D,E,
F:I=SQR((A+B/12+C/192)^2+(D+E/12+F/192)^
2):J=INT(I):K=I-J:L=INT(K*12):M=(K*12)-L
:N=INT(M*16+.5):PRINT:PRINT"THE DIAGONAL
IS";J;L;N;CHR$(8);"/16":FOR X=1 TO 5000
:NEXT:GOTO 1
```

Chuck Smith Jr.
Arlington, WA

★ ★ ★ ★ ★

PEACOCK

This program, which I call *Peacock* because of the designs' resemblance to a peacock's feathers, takes advantage of the Sanyo's spectacular graphics capabilities and its ability to generate random numbers. The program creates an eye-pleasing pattern on the screen using the LINE, CIRCLE and PAINT statements. The pattern is actually the graph of a polar equation with random numbers plugged into the variables.

Monochrome users should reduce the number of colors in the first two RND statements for best results. Each pattern

will continue on the screen until the user presses a key, at which point a new pattern will begin.

```
1 LOCATE 1,1,Q=INT(RND*7)+1:W=INT(RND*
7)+1:IF Q=W THEN 1 ELSE COLOR Q:B=RND*70
:C=RND*70:CLS:FOR J=0 TO 99 STEP .2:IF I
NKEY$>" " THEN 1 ELSE R=3*SIN((B/C)*J):X=
320+COS(J)*R*40:Y=100-SIN(J)*R*20:LINE(3
20,100)-(X,Y),W:CIRCLE(X,Y),Q+2:PAINT(X,
Y):NEXT
```

Michael Doeff
El Cerrito, CA

★ ★ ★ ★ ★

SNAKE

Here is another entry to the contest. It is a game. When you run it, a snake will start moving from the left edge of the screen, getting longer and longer as time passes. The object of the game is to steer the snake so that it covers as much playing area as possible without hitting the boundaries and without intersecting itself. The keys 'h', 'j', 'k', and 'l' cause the snake to turn left, down, up and right respectively. Any other key stops the game and displays the current score.

The game ends when the snake runs into a boundary or itself. This will eventually happen, since the playing area is finite. The bottom boundary is at the 25th line of the screen in order to prevent the scrolling of the screen when the last character on a line is printed. The 25th line will cause the screen to scroll in this case. When you want to restart the game, always use RUN, because the game uses the fact that RUN sets uninitialized variables to zero.

```
1 DIM A(81,25):CLS:A=1:X=1:Y=12:WHILE S=
0:C$=INKEY$:A=(C$="h")-(C$="l")-A*(C$=""
):B=(C$="k")-(C$="j")-B*(C$=""):LOCATE Y
,X,0:PRINT CHR$(2);A(X,Y)=1:K=K+1:X=X+A
:Y=Y+B:S=(X=0)+(X=81)+(Y=0)+(Y=25)+(A(X,
Y)=1):WEND:BEEP:LOCATE 23,1,1:PRINT "SCO
RE:";K;
```

Yekta Gursel
Cambridge, MA

★ ★ ★ ★ ★

KILOBUCK METRONOME

Here's a real shorty that will keep you musicians in time at any tempo. It takes advantage of the Sanyo's limited but loud sound capability to create a metronome tick at speeds from two beats per minute to a thousand. Pressing any key breaks you out of the loop in order to change the tempo.

```
1 CLS:INPUT "Beats per minute";BPM%:WHIL
E 1:OUT 56,0:FOR X%=0 TO 57000!/BPM%:NEX
T X%:IF INKEY$>" " THEN BEEP:RUN ELSE WEN
D
```

Patrick McGrath
Wheaton, MD

★★★★★

COLORFUL COSMIC WORM

I noticed in another computer magazine's one-liner contest that a gentleman was so impressed with his PCjr that he issued a challenge to anyone with a computer in the jr's price range to duplicate his "Colorful Cosmic Worm" in one line. His program drew a single worm with no text (let alone different sized and colored text) and it consumed 209 bytes.

I can't resist a challenge. Even though my basic Sanyo cost less than his PCjr and I was using no optional extras (he needed a more powerful "cartridge BASIC" option), I duplicated the "Colorful Cosmic Worm" in 105 bytes.

Knowing that my Sanyo was capable of much more than that, I added a second baby worm and then different sized and colored text going across and down the screen. At this point I discovered that not only was this far beyond the capabilities of the jr, but it couldn't be done by the IBM PC either — or by any of its clones that I tested.

Still figuring that my Sanyo could go beyond all that is possible on other computers, I devised a way to expand the 256 byte line to 317 bytes. It is very simple (for the Sanyo), but none of the other personal computers we tested have this power. In fact, they were quite frustrating to use as they had no helpful "beep" at the line end and they let me continue typing. It wasn't until I pressed RETURN that I realized all of my digital turmoil beyond 256 bytes had been truncated into some electronic oblivion.

To enter more than 256 bytes, all you have to do is enter a line that is close to the maximum, then fill the remaining spaces with question marks. When LISTed, the question mark becomes PRINT with a space, which forces the line beyond 256 bytes. Just edit this line, typing over the PRINT statements with your code. Remember that you can delete in this mode but you cannot insert. You must add another question mark to do that and it must not be within quotes.

Do not go beyond 317 bytes as the computer will strongly object. An easy way to obtain near maximum length is to enter three lines of code, then three bytes on the fourth line. Fill the rest of the line with question marks (you will be allowed 12) until the beep. Enter and edit the line. You will have 314 bytes to use. It becomes quite easy after you play with it a bit.

```
1 CLS:FOR X=0 TO 1:SYMBOL(15,1),"COSMIC
WORMS",2,2,X+3,X:NEXT:SYMBOL(250,1),"By
David J. Huggett",2,1,5:LOCATE 24,40,0:P
RINT "The SANYO MBC-550/555 Series compu
ters":FOR L=1 TO 2:R=1.3:FOR Z=.4 TO 5.1
5 STEP .01:R=R+.2:C=-C*(C<6)+1:CIRCLE(Z*
90,SIN(Z*5)*(Z*9)+100),R,,,C:NEXT:VIEW(
9,99)-(200,198):NEXT:WHILE E=0:WEND
```

David Huggett
Scarborough, Ontario



SUBMITTING MATERIAL

Contributions to SOFT SECTOR are welcome from everyone. We like to run a variety of programs which will be useful/helpful/fun for other Sanyo owners.

• **FORMAT:** Unless the program accompanying your submission is less than 10 lines, we must have the program itself on disk. We will print out the listing to our specifications. We simply cannot take the time to key in (and debug our typing errors) material which is longer than that. Editorial copy can also be included on disk, using any of the word processors currently available for the Sanyo 550, 555 or 775. However, please also include a double-spaced hard copy of your editorial material and hard copy of your program listing. Please do not send text in all capitals. Use upper- and lowercase. While it is a big help to us in typesetting for you to send your article saved on disk using the ASCII option, it is not mandatory. But we must have, at the very least, a double-spaced hard copy of the article.

• **WHAT TO WRITE:** Anything with a practical application. If it interests you, it will probably interest a lot of others. However, we vastly prefer articles with accompanying programs which can be entered and run. The more unique the idea, the more appeal. We can prepare finished tables, diagrams and schematics from your rough draft if you provide legible copy and full directions. We have a continuing need for short articles with short listings.

We do pay for submissions, based on a number of criteria. Those wishing remuneration should *so state* when making submissions.

For the benefit of those who wish more detailed information on making submissions, please send an SASE to: Submissions Editor, SOFT SECTOR, P.O. Box 385, Prospect, KY 40059. We will send you some more comprehensive guidelines.

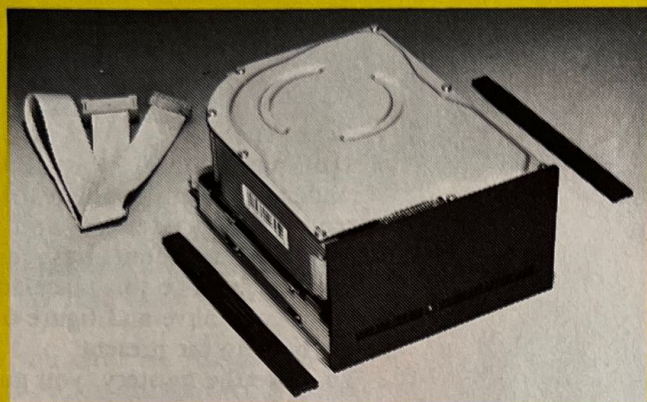
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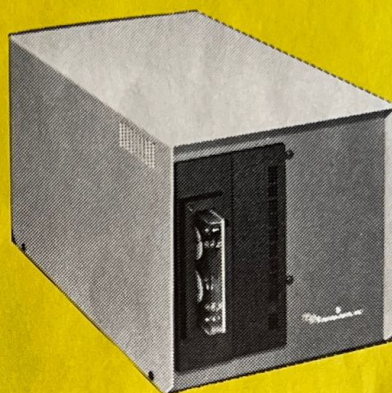
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Go Adventure . . .
Solve Mystery . . . Get Satisfaction . . .
and have a lot of fun in . . .

LAND OF THE CAVE BEAR

BY LEONARD HYRE

Not long after I discovered how handy a computer can be, I stumbled through my first Adventure. When the quest was achieved (escaping a derelict starship), the satisfaction I felt was immense. I was hooked from then on.

This Adventure, *The Land of the Cave Bear*, was written in hopes that I could show my computing friends just what they were missing. I had in mind an Adventure that was unique and challenging, but at the same time it had to be fun. And more importantly, it had to be solvable in a reasonable amount of time, even for a relative novice.

(Leonard Hyre works as a claims representative for the Social Security Administration. He has written several articles for THE RAINBOW and has written commercial programs for the Tandy Color Computer, the Apple II, the Commodore and the TI-99 computers. He may be contacted at P.O. Box 403, Cambridge, MD 21613; 301-228-0064)

Cave Bear takes place in the far distant past, 50,000 years B.C. The Neanderthal people populate the world, surrounded by strange and exotic beasts. An accident has sent our adventurer back to this place and your job is to stay alive and figure out how to get back to the present.


To solve the mystery, you guide the adventurer with simple two-word commands, the first of which is a verb. For example, "Get Rock," "Go South" or "Cook Steak" are all legal commands. The program will respond appropriately (usually) and await the next command. There are also a few single-word commands, standard to most Adventures. An example is the word, "Inventory," to get a list of the items the adventurer is now carrying. Another is "Look" or "View" to get a description of the surroundings. All commands should be made in uppercase (LOCK on), and two-word commands are separated by a single blank space.

You may be interested to know how an Adventure game works, or may even be contemplating writing one yourself. I have tried to interlace *Cave Bear* with sufficient REM statements to lead you through the main sections of the program. Additionally, let me explain some of the main routines in detail.

The program starts out by DIMensioning needed arrays for the DATA statements we will be READing in. We then set a few variables with the initial values required to start the adventurer in the correct setting.

In Line 150, we make an immediate jump to a title screen routine. This routine puts up the initial credits (ego strokes here), then follows with the "Scenario" screen and finally a graphic representation of a "Real Time Distortion Gauge." (Bet you don't have many of those lying around.)

I think the Sanyo is the best graphics machine around, so even when doing a text-oriented program, I find myself



taking advantage of the powerful Sanyo BASIC commands. For example, the SYMBOL command can present many different options to the writer. I use it to write the title itself, emphasizing *Cave Bear*. Then it is used as a heading for the Scenario screen and of course, is the key ingredient in the rotating numbers of the "Distortion Gauge." Following this display, it's time to get back to the real work of writing the story.

When you write an Adventure, you must first decide on the events to take place and then, using them, draw a map of the rooms (locations) in the Adventure. You then place objects — some needed, some not — in the various rooms. Now, you are armed for creating the program itself.

The program must be able to control all of the above. Thus we must now READ in all the DATA necessary to run the story. Lines 230 through 490 are used to list the DATA needed. This DATA is READ by the routines found from lines 530 through 680.

Line 550 reads in 17 locations (or rooms) as P\$. This is what you will "see" when you "Look" or arrive at a particular place in the Adventure.

The next routine gets the description of each object to be found, a short version of the same, and an initial location for each of the objects. For example, the DATA for this routine is contained in lines 330 through 390, thus the first object description is "Remains Of The Timecraft Crash" and will be found at Location 1 ("A shaded hillside . . ."). The short object description simply makes it easier to manipulate objects; for example: Instead of having to get a "Braided Rope Of Interwoven Rope," you can just "Get Rope."

Possible directions of travel are the next subject of a subroutine, found at lines 630 and 640. Numbers representing all possible exits from each of the 17 locations are READ in here.

The list of possible verbs is next (Line 680), along with a control number C(C), to be able to jump to the proper routine within the program once a verb is determined.

Finally, actual play begins at Line 720. The first lines check on remaining "Strength Level," check for various special conditions, tell us where the adventurer is, and ask for the next action. The ON A GOSUB in Line 1060 sends the program to the appropriate routine, based on the verb used.

The bulk of the program is made up of these individual routines. It is easy enough to follow through the logic. As an example, say the command is "Drop Rope," in which the verb "Drop" (4) sends the program to the fourth subroutine shown in the ON A GOSUB — in other words, to Line 1200. Here a loop checks to see if the location of the rope is on the adventurer (1000). If it is, then Line 1220 is executed, the item is dropped and the rope's location is changed to the current room. Otherwise, Line 1240 simply says "I Don't Have The Rope" and returns to Line 950 "What Now?"

A couple of tips: For directions of travel you can say "Go Nor, Go Sou, Go Eas or Go Wes." To see what you are carrying, type "Inv" instead of "Inventory," etc. Most objects can be abbreviated by the first three letters of the word "Sab = Sabretooth." Watch your strength level — even adventurers must eat and drink.

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DEALER	CITY	PHONE
BAC Services Inc.	Vars	(613)835-3225
Burlington Business Computers C.P. & A. Chips Computers & Electronics Ltd.	Burlington	(416)681-2664
Computer Support Computer Workshop Ltd.	Toronto	(416)925-9950
Computerized Business Systems ConPute Data Marketing E.T. Wilson O.E. Ltd.	Kingston	(613)542-4987
Ferguson, James & Associates Guardian Data Product Inc.	Scarborough	(416)752-4014
Hastings Data Systems Home Computer Centre IBC	Oakville	(416)825-0583
Computers Information Connection	Windsor	(519)258-7966
	Toronto	(416)960-0300
	Waterloo	(519)886-2933
	Peterborough	(705)745-6227
	Toronto	(416)366-6192
Legal-Ease Computer Systems Inc.	Willowdale	(416)225-1434
Markatron Microland Business Systems	Oshawa	(416)723-6500
	Kingston	(613)542-9450
	Vanier	(613)746-3250
	Brantford	(519)759-4400
	Toronto	(416)665-4920
	Belleville	(613)962-1551
	Kitchener	(519)745-6789
	Toronto	(416)860-1601
	Ottawa	(613)234-1387
	Milton	(416)878-8869
	London	(519)672-9950

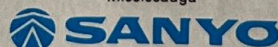
Microtech	Milton	(416)876-4988
	Georgetown	(416)846-4988
Micro Mart Computers Ltd.	Scarborough	(416)293-9444
Nelson Business Machines Ltd.	Burlington	(416)335-3300
	Waterloo	(519)653-6404
	St. Catharines	(416)688-2311
Neutron Computers Inc.	Guelph	(519)822-7691
Parts Galore Computer Centre	Toronto	(416)598-9874
RSG Runtime Systems Group Scitron Corp.	Whitby	(416)725-0583
	Mississauga	(416)624-2190
	Mississauga	(416)820-5810
	Toronto	(416)968-3011
	Brampton	(416)791-7266
	Scarborough	(416)288-1244
Spectra Colour Ltd.	Willowdale	(416)669-9942
Strictly Business Computers Inc.	Port Hope	(416)885-4597
Town & Country	London	(519)673-4930
Tron-Ex Canada Ltd.	Willowdale	(416)498-5494

QUEBEC

DEALER	CITY	PHONE
ATC Computer Products Becterm Compuware	Montreal	(514)331-7953
	Levis	(418)837-5894
	Montreal	(514)334-1088
	Pierresonde	(514)620-3627
John Chandiooux Deltroic Solare Inc.	Ste. Anne de Belle Vue	(514)331-6100
Futur Byte	Valleyfield	(514)371-5720
	Montreal	(514)861-2831
	Montreal	(514)327-3121
	Longueuil	(514)677-5264
	Trois Rivières	(819)373-7372
	Sherbrooke	(819)564-1202
	Ste. Foy	(418)681-0061
Irisco Les Entreprises P.A. de Grande Maison Inc.	Laval	(514)662-0341
Les Monde P.C. MDS	Montreal	(514)481-0689
	Montreal	(514)337-1730
	Montreal	(514)335-0885
Microcible Micropole	Repentigny	(514)581-1902
Microtechnie P.M.C.	Sillery	(418)842-8395
R.E. Dumoulin Inc.	St. Georges	(418)228-5504
Selectronic	Montreal	(514)388-7942
	Quebec City	(418)683-2525
	Anjou	(514)352-6200
	Granby	(514)372-0625
Trinfec Votach Electronique Inc.	Montreal	(514)738-8231

SASKATCHEWAN

DEALER	CITY	PHONE
Interactive Systems Inc.	Regina	(306)522-3828
Memory Lane Computers & Software Inc.	Saskatoon	(306)665-2707
United Office Machines	Prince Albert	(306)922-3333
Zycon Computing Ltd.	Regina	(306)949-7777



For information please contact your local dealer or Sanyo Business Systems, 50 Beth Neilson Drive, Toronto, Ontario, Canada, Tel: (416)421-8344, TLX: 065-24383

Listing 1: BEAR.BAS

```

1 '*****
2 '*'
3 '*'      Land of the CAVE BEAR      '*'
4 '*'
5 '*'      (c)  L. Hyre 1985          '*'
6 '*'
7 '*****
8 '

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(Editor's Note: Users of the MBC-775 and Video RAM Board should see the GW-BASIC modifications in Listing 2 before typing in the entire program; users of monochrome monitors, see Listing 3 for those modifications.)

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100 DEFINT S
110 DIM P$(18),OB$(29),B$(29),B(29),C$(29),C(29),T(4,17),T$(4),LD(6)
120 '
130 '***** GO DRAW TITLE SCREEN *****
140 '
150 GOSUB 1950
160 '
170 '***** SET INITIAL VALUES AND LIST DATA STATEMENTS *****
180 '
190 CLS:ZW=1:S=100:WT=0:BK=0:NX=0:M=1:L=1:CI=1:LD=0
200 '
210 '***** LOCATION DESCRIPTIONS *****
220 '
230 DATA A SHADED HILLSIDE PEPPERED WITH BUSHY COVER,AN OPEN MEADOWLAND WHERE ST
RANGE HERBIVORES GRAZE PEACEFULLY. HERE ISTHE REST OF THE CRASH REMAINS - COVER
ED BY ROCK AND DEBRIS! (IF ONLY YOU HAD SOME DYNAMITE OR SOMETHING!)
240 DATA A STILL SMOKING VOLCANIC MOUNTAIN,A DIMLY LIT AND FOR-BODING WOODS. THE
RE'S NO SIGN OF LIFE AROUND.
250 DATA A FLINT OUTCROPPING ON A GRASSY KNOLL. THE FLINT SEEMS TO HAVE BEEN WO
RKED!,A BUSY WATERHOLE
260 DATA A SWAMPY HOLLOW WHERE A HERD OF MASTODON PLAYFULLY WALLOW IN THE MUCK,A
NEANDERTHAL CAMPSITE. THERE ARE SIGNS OF VERY RECENT USE.
270 DATA RIDGE OVERLOOKING A HUGE SABRE TOOTH LION FEEDING ON A FRESHLY KILLEDAN
TELOPE. A SOFT BREEZE BLOWS FROM THE EAST.,INSIDE A EERIE DARK CAVE ENTRANCE - A
GROWL IS HEARD... ,A NEANDERTHAL CAVE - DAMP AND COOL.
280 DATA A TINY SECRET CHAMBER LIT BY TORCH. IT IS PAINTED WITH STRANGE BEASTSBO
TH REAL AND IMAGINED,A NARROW PATHWAY ALONG A DEEP CREVICE,A THICK AND TOTALLY U
NPENETRABLE FOREST. YOU WOULDN'T WANT TO LINGER HERE.
290 DATA AN EXPANSIVE MARSHY BOG,A MOSQUITO INFESTED SWAMPLAND,A LARGE PLAINS AR
EA- FAR TOO LARGE TO SET OUT ON. A SULPHURIC CLOUD RISES FROM A FAR DISTANT VOL
CANO.
300 '
310 '***** OBJECT DESCRIPTIONS, OBJECTS, OBJECT LOCATION *****
320 '
330 DATA REMAINS OF THE TIMECRAFT CRASH,*,1,EMPTY CANTEEN,CANTEEN,1,THE CONTROL
PANEL,*,2,THE POWER CANISTER ---THE TIME DILATION LOCATER MISSING!,*,2,FLASHLIG
HT,FLASHLIGHT,2
340 DATA HARDENED LAVA FLOW,*,3,CRUSTY SULPHUR DEPOSITS,SULPHUR,3,BUSHES LADEN W
ITH RED BERRIES,BERRIES,4,MENACING LOOKING CLUB,CLUB,4
350 DATA POTASSIUM NITRATE DEPOSIT,POTASSIUM NITRATE,4,FLAKED SPEARHEADS,SPEARHE
ADS,5,BRAIDED ROPE OF INTERWOVEN VINE,ROPE,5,OLD HOLLOWED OUT LOG,LOG,6,FRUIT TR
EES GROWING ALONG THE BANK. BABOONS ARE FEEDING ON THE FRUIT,FRUIT,6
360 DATA UGLY WARTHOG ROOTING UP THE EARTH,*,6,BRIGHTLY FEATHERED HOATZIN,*,14,M
ASTODON HERD,*,7,FIRE HARDENED SPEAR SHAFT,SHAFT,8,CHARCOAL EMBERS,CHARCOAL,8
370 DATA SABRE TOOTH LION,*,9,TASTY LOOKING ANTELOPE STEAKS,STEAKS,9
380 DATA CRAMPED NARROW PASSAGEWAY,*,11,YOUNG NEANDERTHAL WOMEN,*,11,A GNARLED O
LD MEDICINE MAN,*,11,A RING OF CAVE BEAR SKULLS,SKULLS,12,THE TIME DILATION LOCA
TER,LOCATER,12
390 DATA A DRIED ANIMAL SKIN,SKIN, 15,SMALL ROUNDED STONES,STONES,16,THOUSANDS O

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F QUAGGA AND OTHER HERD ANIMALS,*,17
400 '
410 '***** EXITS FROM INDIVIDUAL LOCATIONS *****
420 '
430 DATA 0,4,2,0,0,5,0,1,0,-1,0,0,1,7,5,0,2,8,6,4,-1,0,14,5,4,16,8,0,5,15,9,7,0,
-3,10,8,17,0,0,9,10,0,13,9,13,0,0,0,12,0,11,0,0,0,6,8,0,0,16,7,0,15,0,0,10,0,0
440 '
450 '***** VERBS [ INCLUDING SINGLE WORD COMMANDS] *****
460 '
470 DATA INVENTORY,1,LOOK,2,VIEW,2,GET,3,TAKE,3,DROP,4,GO,5,KILL,6,HIT,6,ATTACK,
6,STAB,6
480 DATA EAT,7,DRINK,8,SWIM,9,MAKE,10,BUILD,11,COOK,12,LIGHT,13,FLOAT,14,ROW,14,
FILL,15,HELP,16,CRY,17,YELL,18
490 DATA SAY,19,LISTEN,20,LIFT,21,WEAR,22
500 '
510 '***** READ IN THE DATA *****
520 '
530 '***** READ IN PLACES *****
540 '
550 FOR C=1 TO 17:READ P$(C):NEXT C
560 '
570 '***** READ IN DESCRIPTIVE OBJECTS,OBJECTS,LOCATION OF OBJECTS *****
580 '
590 FOR C=1 TO 29:READ OB$(C),B$(C),B(C):NEXT C
600 '
610 '***** READ POSSIBLE EXITS FROM EACH LOCATION *****
620 '
630 FOR C=1 TO 17:READ T(1,C),T(2,C),T(3,C),T(4,C):NEXT C
640 T$(1)="NORTH":T$(2)="SOUTH":T$(3)="EAST":T$(4)="WEST"
650 '
660 '***** READ IN VERBS *****
670 '
680 FOR C=1 TO 28:READ C$(C),C(C):NEXT C
690 '
700 '***** ACTUAL PLAY BEGINS HERE *****
710 '
720 CLS:RD=INT(RND(1)*9)+1:S=S-RD:IF S>100 THEN S=100 ELSE IF S<0 THEN 1800 ELS
E 730
730 LOCATE 1,1,0:SYMBOL(5,5),"Your Strength Level Is ",2,2,3:SL$=STR$(S)+"%":SYM
BOL(350,5),SL$,2,2,3:LINE(0,20)-(639,20),3
740 IF CSRLIN>20 THEN GOSUB 1910
750 LOCATE 25,20:COLOR 6,0:PRINT"The Land of the CAVE BEAR!..... by L. Hyre";:C
OLOR 2,0
760 LOCATE 4,1,1:PRINT"YOU ARE AT ";P$(L)
770 IF L=10 AND LEFT$(OB$(20),3)="SAB"THEN B(20)=10
780 IF L=2 AND B(10)=1000 THEN B(10)=2:B$(10)="*":OB$(10)="POTASium NITRATE":LD=
LD-1
790 IF L=2 AND B(19)=1000 THEN B(19)=2:B$(19)="*":LD=LD-1
800 IF L=2 AND B(7)=1000 THEN B(7)=2:B$(7)="*":LD=LD-1
810 IF L=2 AND B(10)=2 AND B(19)=2 AND B(7)=2 THEN B(10)=0:B(19)=0:OB$(7)="EXPLO
SIVE"
820 IF L=2 AND B(26)=1000 THEN B(26)=2:LD=LD-1
830 IF L=2 AND B(7)=2 AND B(26)=2 AND OB$(7)="EXPLOSIVE"THEN 1770
840 IF CI=1 AND L=10 AND LEFT$(B$(20),2)="DE" THEN 1840
850 IF CI=2 THEN T(3,10)=0
860 IF CSRLIN>20 THEN GOSUB 1910 ELSE PRINT
870 PRINT"YOU SEE:"
880 FOR C=1 TO 29:IF B(C)=L THEN PRINT OB$(C);" "
890 NEXT C

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900 IF L=10 AND B(20)=10 AND LEFT$(OB$(20),3)="SAB" THEN 1810
910 IF CSRLIN>20 THEN GOSUB 1910 ELSE PRINT
920 PRINT"FROM HERE YOU CAN GO:"
930 FOR C=1 TO 4:IF T(C,L)<>0 THEN PRINT T$(C);" ";
940 NEXT
950 IF CSRLIN>20 THEN GOSUB 1910 ELSE PRINT
960 PRINT"WHAT NOW";:INPUT ACT$
970 FOR C=1 TO LEN(ACT$):IF MID$(ACT$,C,1)=" "THEN VRB$=LEFT$(ACT$,C-1):W$=MID$(
ACT$,C+1,LEN(ACT$)-C):GOTO 990 ELSE NEXT
980 VRB$=ACT$
990 FOR C=1 TO 28
1000 IF LEFT$(C$(C),3)=LEFT$(VRB$,3) THEN A=C(C):GOTO 1060
1010 NEXT
1020 PRINT:PRINT"UH?":GOTO 950
1030 '
1040 '***** WHERE TO BRANCH AFTER DETERMINATION OF VERB *****
1050 '
1060 ON A GOTO 1080,1120,1130,1200,1270,1360,1430,1500,1530,1550,1580,1590,1600,
1620,1660,1680,1690,1700,1710,1720,1730,1740
1070 IF L=2 AND B(26)=1000 THEN OB$(26)="REPAIRED LOCATER":B$(26)="*":B(26)=0
1080 IF CSRLIN>20 THEN GOSUB 1910
1090 PRINT"I AM CARRYING:"
1100 FOR C=1 TO 29:IF B(C)=1000 THEN PRINT B$(C)
1110 NEXT:GOTO 950
1120 GOTO 720
1130 IF LD>4 THEN PRINT"I'M CARRYING TOO MUCH!":GOTO 950
1140 FOR C=1 TO 28:IF LEFT$(W$,3)=LEFT$(B$(C),3) AND B(C)=L AND B$(C)<>"*"THEN B
(C)=1000:PRINT"I GOT THE ";B$(C);"!":LD=LD+1:GOTO 950

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1150 NEXT C
1160 IF LEFT$(W$,2)="SA"AND L=9 THEN PRINT"I GOT IT BUT I THINK IT WAS A ..BIG
GG!!... MISTAKE!":PRINT"IT'S EATING ME ALIVE!":FOR DL=1 TO 15:OUT&H38,DL+10:NEXT:
FOR DL=1 TO 2000:NEXT:PRINT"I'M DEAD.....":END
1170 IF LEFT$(W$,3)="WAR"AND L=6 AND ZW=1 THEN PRINT"I GOT ONE AND IT'S ONE UGLY
SUCKER! I LET IT GO."::ZW=ZW+1:GOTO 950
1180 IF ZW=2 AND LEFT$(W$,3)="WAR"AND L=6 THEN PRINT"YOU LEARN SLOW-DON'T YOU? I
'M BEING GORED TO DEATH!":GOTO 950
1190 PRINT"I CAN'T TAKE THAT!!":GOTO 950
1200 FOR C=1 TO 28
1210 IF NX=1 AND L=9 AND LEFT$(W$,2)="SP"THEN NX=2:GOTO 1250
1220 IF LEFT$(W$,3)=LEFT$(B$(C),3) AND B(C)=1000 THEN B(C)=L:PRINT"I DROPPED IT!
":LD=LD-1:GOTO 950
1230 NEXT
1240 PRINT"I DON'T HAVE THE ";W$:GOTO 950
1250 PRINT"YOUR SIGN OF PEACE IS RECOGNIZED":L=11::FOR D=1 TO 1100:NEXT:NX=2:T(
,9)=11:GOTO 720
1260 GOTO 950
1270 FOR C=1 TO 4:IF LEFT$(W$,2)=LEFT$(T$(C),2) THEN DR=C:GOTO 1290
1280 NEXT C:GOTO 1350
1290 IF T(DR,L)>0 THEN L=T(DR,L):GOTO 1310
1300 IF T(DR,L)=0 THEN PRINT"CAN'T GO THAT WAY!":GOTO 950
1310 IF T(DR,L)=-1 THEN PRINT"A SLUGGISH RIVER BLOCKS THAT WAY":GOTO 950
1320 IF T(DR,L)=-3 AND LEFT$(OB$(20),3)="SAB" THEN 1810
1330 IF T(DR,L)=-2 THEN PRINT"A NEANDERTHAL CHIEF BRANDISHING A SPEAR BLOCKS YOU
PATH!":NX=1:GOTO 950
1340 GOTO 720
1350 PRINT"USE A DIRECTION!":GOTO 950
1360 IF L<>9 THEN 1370 ELSE IF L=9 AND LEFT$(W$,2)="SA"AND B(18)<>1000 OR B$(18)
<>"SPEAR"THEN PRINT"I WISH I HAD A SPEAR BUT I'LL GIVE IT A TRY":FOR DL=1 TO 300
:NEXT:PRINT"I'M GOING TO BE A SNACK FOR THIS GUY!":PRINT"I'M DEAD..":END
1370 IF LEFT$(W$,2)="BA"AND L=6 THEN PRINT"THEY'RE TOO CUTE FOR THAT!":GOTO 950
1380 IF LEFT$(W$,2)="SA"AND L=9 AND B$(18)="SPEAR"AND B(18)=1000 THEN PRINT"OK..
..HERE GOES!":PRINT"I GOT'EM....I GOT'EM...!":FOR SW=1 TO 300:NEXT:OB$(20)="DEAD
SABRETOOTH":B$(20)="DEAD SABRETOOTH":T(2,9)=-2:ELSE 1400
1390 IF LEFT$(B$(20),3)="DEA"THEN P$(9)="A RIDGE OVERLOOKING A BLOODY FIELD.":GO
TO 950
1400 IF LEFT$(W$,2)="MA"AND L=7 THEN PRINT"NO WAY-FELLA! I MIGHT BE AN ADVENTURE
R BUT I'M NOT NUTS.":BEEP:GOTO 950
1410 IF L=9 AND LEFT$(W$,2)="CH" OR LEFT$(W$,3)="NEA"THEN PRINT"YOUR SPEAR PIERC
ES HIS CHEST! HE DIES-":FOR DL=1 TO 400:NEXT:PRINT"AND SO DO YOU. THIS MAN WAS Y
OUR DIRECT ANCESTER!":BEEP:END
1420 PRINT"DON'T BE RIDICULOUS!":GOTO 950
1430 IF LEFT$(OB$(20),3)<>"DEA"THEN 1440 ELSE IF M=1 AND LEFT$(W$,3)="STE" OR LE
FT$(W$,3)="ANT"AND L=9 AND LEFT$(OB$(20),3)="DEA"THEN PRINT"DELICIOUS! I REALLY
NEED THAT PROTEIN.":S=100:OB$(21)="ANTELOPE BONES":B$(21)="*":M=2:GOTO 950
1440 IF M=1 AND LEFT$(W$,3)="STE" AND L=9 AND LEFT$(OB$(20),2)="SA" THEN PRINT"T
RY TO TAKE A SABRETOOTH'S DIN-DIN? NO WAY..PAL!":FOR DL=1 TO 800:NEXT:GOTO 950
1450 IF L=4 AND LEFT$(W$,2)="BE"THEN PRINT"NOT BAD.....":FOR DL=1 TO 600:NEXT
:PRINT"KIND OF MAKES YOU WONDER WHY NO ANIMALS ARE EATING THEM!":FOR SW=1 TO 900
:NEXT:PRINT"I'M POISONED!!!!":FOR DL=1 TO 300:NEXT:END
1460 IF LEFT$(W$,2)="FR"AND B(14)=1000 THEN PRINT"BABOONS KNOW WHAT PLANTS TO EA
T.THESE ARE GREAT!":S=S+10:OB$(14)="STRIPPED FRUIT TREES ALONG THE BANK.BABOONS
SIT LAZILY SUNNING THEMSELVES":B$(14)="SEEDS & PITS":B(14)=6:LD=LD-1:GOTO 950
1470 IF L=6 AND LEFT$(W$,2)="FR"AND B(14)=6 THEN PRINT"I CAN'T NOW!":GOTO 950
1480 IF L=9 AND M=2 AND LEFT$(W$,3)="STE"THEN PRINT"NOTHING LEFT THERE BUT VULTU
RES PICKING THE SKELETON!":S=S-5:T(2,9)=-2:GOTO 950
1490 PRINT"I'M NOT EATING THAT!":GOTO 950
1500 IF B(2)=1000 AND WT=1 AND LEFT$(W$,2)="WA"OR LEFT$(W$,2)="CA"THEN S=S+20:PR

```



```

INT"AHH! REFRESHING!":WT=0:OB$(2)="DRAINED CANTEEN":LD=LD-1:O(2)=L:GOTO 950
1510 IF LEFT$(W$,2)="WA"AND WT=1 AND B(2)<>1000 THEN PRINT"I DON'T HAVE A CANTEE
N!":GOTO 950
1520 PRINT"THAT'S OUT OF THE QUESTION!":GOTO 950
1530 IF L=6 OR L=3 THEN CLS:PRINT"OK.I'M A GOOD SWIMMER,BUT I'M NOT SURE SWIMM
ING IN AN UNKNOWN RIVER IS SMART.":FOR D=1 TO 1600:NEXT:PRINT"SOMETIMES THERE A
RE CROCS IN THERIV..BLUB..BLUB..BLUB..!":END
1540 PRINT"I CAN'T SWIM THAT!":GOTO 950
1550 IF B(11)=1000 AND B(18)=1000 AND LEFT$(W$,3)="SPE"THEN PRINT"I'VE GOT A GOO
D WEAPON NOW!":B(11)=0:B$(18)="SPEAR":B(18)=1000:FOR DL=1 TO 600:NEXT:B$(11)="*
":LD=LD-1:GOTO 720
1560 PRINT"I CAN'T MAKE A ";W$
1570 GOTO 950
1580 PRINT"IF I TRIED TO BUILD THAT I WOULD PROBABLY ATTRACT THE WRONG KIND OF A
TTENTION!":GOTO 950
1590 PRINT"THIS IS A MACHO ADVENTURE-----":FOR DL=1 TO 500:NEXT:PRINT" EAT
IT 'RAW!":GOTO 950
1600 IF B(5)=1000 AND LEFT$(B$(18),2)="SP"AND B(18)=1000 AND LEFT$(W$,2)="FL"AND
L=10 THEN PRINT"A CAVE BEAR IS BLINDED BY THE LIGHT....JUST LONG ENOUGH FOR Y
OU TO RUSH IN AND STAB IT. YOU TAKE THE HEAD AS A TROPHY":BK=1:S=S+15:GOTO 9
50
1610 PRINT"I CAN'T LIGHT A ";W$:GOTO 950
1620 IF L=3 THEN 1630 ELSE IF L=6 AND W$="LOG"OR W$="BOAT"THEN PRINT"YOU FLOAT A
CROSS THE RIVER. THE CROCODILES ARE UPSET THAT YOU DIDN'T SWIM!":L=3:B(13)=3:GOT
O 1650
1630 IF L<>3 THEN 1640 ELSE IF L=3 AND W$="LOG"OR W$="BOAT"THEN PRINT"YOU FLOAT
ACROSS THE RIVER.":L=6:B(13)=6:GOTO 1650
1640 PRINT"YOU CAN'T FLOAT A ";W$:GOTO 950
1650 FOR DL=1 TO 1000:NEXT:GOTO 720
1660 IF L=6 AND B(2)=1000 AND LEFT$(W$,2)="CA"THEN WT=1:B(2)=6:OB$(2)="FULL CANT
EEN":B$(2)="CANTEEN":PRINT"I FILLED IT....":GOTO 950
1670 PRINT"THAT'S SILLY!":GOTO 950
1680 PRINT"HELP - YOU SAY!....IT WASN'T MY IDEA TO COME HERE IN THE FIRST PLACE
!!!!":GOTO 950
1690 PRINT"SISSY!":GOTO 950
1700 PRINT"HELLOOOOOOOO.....!":BEEP:GOTO 950
1710 PRINT"I SAID ";W$;"":PRINT"BUT NOTHING HAPPENED!":GOTO 950
1720 PRINT"I HEAR THE BIRDS SINGING IN THE TREES. BIG DEAL!":GOTO 950
1730 PRINT"SORRY, I'VE JUST HAD A HERNIA OPERATION!":GOTO 950
1740 IF LEFT$(W$,2)="SK"AND B(27)=1000 THEN PRINT"I SURE LOOK SILLY IN THIS LITT
LE SQUIRREL SKIN":LD=LD-1:FOR DL=1 TO 600:NEXT:B(27)=0:GOTO 950
1750 IF LEFT$(W$,2)="SK"AND B(27)<>1000 THEN PRINT"I DON'T HAVE THE SKIN":GOTO 9
50
1760 PRINT"WEAR WHAT????...NO WAY!":GOTO 950
1770 FOR DL=1 TO 1200:NEXT:CLS:PRINT:PRINT"YOU QUICKLY MAKE A GUNPOWDER MIXWITH
THE CHEMICALS YOU HAVE GATHERED. YOU USE IT TO BLAST AWAY THE ROCK DEBRIS. AFT
ER YOU INSTALL THE DILATION CONTROL"
1780 PRINT"THE TEAM OF RESEARCHERS IN THE 21ST CENTURY THEN LOCATE AND RESCUE YO
U. YOU HAVE SURVIVED 'THE LAND OF THE CAVE BEAR'"
1790 PRINT"THE END";:END
1800 PRINT"YOUR STRENGTH DROPPED TO NOTHING AND YOU HAVE DIED!":PRINT"SUCH IS TH
E END OF A CARELESS ADVENTURER!":END
1810 PRINT:PRINT"YIPE!! A SABRETOOTH LION....":FOR DL=1 TO 1500:NEXT:PRINT"NEVER
GO UPWIND OF A LIVE SABRETOOTH LION!":PRINT:FOR DL=1 TO 1500:NEXT:PRINT"HE OBVI
OUSLY FOLLOWED YOU FROM THE SITE OF HIS KILL."
1820 FOR DL=1 TO 1500:NEXT:PRINT"HE POUNCES!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!":FOR DL=1 TO 1
000:NEXT:PRINT"NOW YOU ARE HIS MAIN COURSE.....":PRINT"THE END!"
1830 END
1840 INPUT"WANNA GO FARTHER IN";AN$

```



```

1850 IF LEFT$(AN$,1)="Y" THEN 1860 ELSE 1870
1860 IF B(5)=1000 THEN CI=2:GOTO 950 ELSE IF B(5)<>1000 THEN PRINT"I CAN'T SEE I
N THE DARK!":FOR DL=1 TO 1000:PRINT"A CAVE BEAR HAS ME IN IT'S ARMS!IT'S ALL OVE
R.....PLEASE.....BE MORE CAREFUL WITH YOUR NEXT HAPLESS ADVENTURER!":END
1870 PRINT"WHEW!!! I WAS AFRAID YOU MIGHT TRY IT!":CI=2:L=10:FOR DL=1 TO 1000:N
EXT::GOTO 720
1880 '
1890 '***** WIPE SCREEN CLEAN [LEAVE STRENGTH LEVEL] *****
1900 '
1910 FOR WIPE=4 TO 24:LOCATE WIPE,1:PRINT STRING$(80," ");:NEXT:LOCATE 25,1:PRIN
T STRING$(79," ");:COLOR 6,0:LOCATE 25,20:PRINT"The Land of the CAVE BEAR!.....
by L. Hyre";:COLOR 2,0:LOCATE 4,1:RETURN
1920 '
1930 '***** INITIAL TITLE SCREEN *****
1940 '
1950 LOCATE 1,1,0:COLOR 6,0:CLS:LINE(0,0)-(639,199),7,B:LINE(10,5)-(629,194),7,B
:PAINT(3,3),4,7:SYMBOL(80,20),"The LAND of the",4,1,4
1960 SYMBOL(220,40),"CAVE",6,8,4:SYMBOL(220,100),"BEAR",6,8,4
1970 TT$="An Adventure in Time!.....(c) L.Hyre":OVER=22
1980 FOR TT=1 TO LEN(TT$):LOCATE 22,OVER:PRINT MID$(TT$,TT,1):OUT &H38,75:OVER =
OVER+1:FOR DELAY=1 TO 50:NEXT:NEXT TT
1990 FOR DELAY=1 TO 3500:NEXT:COLOR 0,2:CLS
2000 '
2010 '***** THE SCENARIO SCREEN *****
2020 '
2030 LINE(10,2)-(240,25),0,B:SYMBOL(20,5),"The Scenario-",2,2,0
2040 LOCATE 5,1:PRINT"Year 2000...."
2050 LOCATE 7,1:PRINT"I awake....Where am I?...Now, it begins to come back. I wa
s out backpacking in the New Mexico desert when I chanced upon a strange machin
e. I approached it cautiously. On the side, an inscription read...."
2060 LINE(180,74)-(450,98),0,B:LOCATE 11,25:PRINT"NASA Time Shuttle EXPERIMENTAL
"
2070 LOCATE 12,37:PRINT"DANGER"
2080 LOCATE 14,1:PRINT"Suddenly, it began to make strange noises!"
2090 LOCATE 15,1:PRINT"HUM..HUMM...HUMMM....HUMMMM.....HUMMMM....."
2100 LOCATE 16,1:PRINT"I tried to get away. Too late! Things are spinning and fa
ding to black!"
2110 LOCATE 17,1:COLOR 6,0:PRINT STRING$(80," ");" BUT...Why do I have a vision
of 'Strange Hairy Men' carrying away something ? ";:COLOR 0,2
2120 LINE(0,148)-(639,148),0
2130 LOCATE 20,20:PRINT"[MEANWHILE....BACK AT NASA HEADQUARTERS!]"
2140 LOCATE 21,1:PRINT"The TIME/CONTROL team tries desperately for a TIME-DILATI
ON Fix on the hapless and unsuspecting traveler. It is his only hope!"
2150 LOCATE 24,1:PRINT"PRESS ANY KEY to plunge into time!"
2160 '
2170 '***** SHOW THE REAL TIME GAUGE *****
2180 '
2190 AK$=INKEY$:IF AK$="" THEN 2190 ELSE COLOR 2,0:CLS
2200 LINE(200,10)-(400,140),2,B:LOCATE 21,26:PRINT"Real Time Distortion Gauge"
2210 PT=0
2220 FOR DG=2000 TO (-48000!) STEP -2500
2230 DG$=" "+STR$(DG)
2240 SYMBOL(300,75),DG$,1,1,3,PT:OUT &H38,75
2250 FOR DL=1 TO 150:NEXT:SYMBOL(300,75),DG$,1,1,0,PT
2260 PT=PT+1:IF PT=4 THEN PT=PT-4
2270 NEXT
2280 SYMBOL(270,60),"YEAR",2,1,3:SYMBOL(245,80),"50000 BC",2,1,4
2290 FOR DL=1 TO 3000:NEXT:RETURN

```


Listing 2: GWMOD.BAS

```

11 '*****
12 '*'
13 '* SANYO 775 / 880 USERS VRS. *
14 '*'
15 '* Replace Line 730 and Lines *
16 '* 1910-<end program> with *
17 '* the following lines. *
18 '*****
19 '
730 CLS:WIDTH 80:COLOR 2,0:LOCATE 1,1,0:PRINT"STRENGTH LEVEL IS NOW ";S;:LOCATE
2,1:PRINT STRING$(80,"_");
731 '
732 '
1950 KEY OFF:WIDTH 40:SCREEN 0,0:COLOR 4,0:CLS
1960 LOCATE 4,12:PRINT"The Land of the":LOCATE 6,12:PRINT"C A V E-B E A R";:
1970 OVER=1
1980 TT$="An Adventure in Time!...(c) L. Hyre"
1990 FOR TT=1 TO LEN(TT$):LOCATE 22,OVER:PRINT MID$(TT$,TT,1):OUT &H38,75:OVER =
OVER+1:FOR DELAY=1 TO 50:NEXT:NEXT TT
2000 FOR DELAY=1 TO 3500:NEXT:COLOR 0,2:CLS
2010 '
2020 '***** THE SCENARIO SCREEN *****
2030 '
2040 WIDTH 80:LOCATE 1,1:PRINT"The SCENARIO"
2050 WIDTH 80
2060 LOCATE 3,1:PRINT"Year 2000...."
2070 LOCATE 7,1:PRINT"I awake....Where am I?...Now, it begins to come back. I wa
s out backpacking in the New Mexico desert when I chanced upon a strange machin
e. I approached it cautiously. On the side, an inscription read...."
2080 LOCATE 11,25:PRINT"NASA Time Shuttle EXPERIMENTAL":LOCATE 12,37:PRINT"DANGE
R"
2090 LOCATE 14,1:PRINT"Suddenly, it began to make strange noises!"
2100 LOCATE 15,1:PRINT"HUM..HUMM...HUMMM....HUMMMM.....HUMMMM....."
2110 LOCATE 16,1:PRINT"I tried to get away. Too late! Things are spinning and fa
ding to black!"
2120 LOCATE 17,1:COLOR 6,0:PRINT STRING$(80," ");" BUT...Why do I have a vision
of 'Strange Hairy Men' carrying away something ? ";:COLOR 0,2
2130 LOCATE 19,1:PRINT STRING$(80," ");
2140 LOCATE 20,20:PRINT"[MEANWHILE....BACK AT NASA HEADQUARTERS!]"
2150 LOCATE 21,1:PRINT"The TIME/CONTROL team tries desperately for a TIME-DILATI
ON Fix on the hapless and unsuspecting traveler. It is his only hope!"
2160 LOCATE 24,1:PRINT"PRESS ANY KEY to plunge into time!";
2170 '
2180 '***** SHOW THE REAL TIME GAUGE *****
2190 '
2200 AK$=INKEY$:IF AK$=""THEN 2200 ELSE COLOR 2,0:CLS

```

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```

221Ø WIDTH 4Ø:COLOR 6,Ø:LOCATE 6,7:PRINT"Real Time Distortion Guage";
222Ø FOR DG=2ØØØ TO (-48ØØØ!) STEP-25ØØ
223Ø LOCATE 4,17:PRINT DG;
224Ø FOR DL=1 TO 2ØØ:NEXT
225Ø NEXT DG
226Ø LOCATE 4,12:COLOR 4:PRINT"5ØØØØ yrs. BC";
227Ø FOR DL=1 TO 3ØØØ:NEXT:RETURN

```

Listing 3: MONOMOD.BAS

```

11 '*****
12 '*          MONOCHROME USERS          *
13 '*****
14 'TYPE IN THE LINES FOLLOWING THESE REM REMARKS
15 'SAVE FILE AS "BEARMONO.BAS",A
16 'LOAD BEAR.....MERGE"BEARMONO.BAS"
17 'SAVE AS "BEAR"..for best monochrome results
18 '
73Ø LOCATE 1,1,Ø:SYMBOL(5,5),"Your Strength Level Is ",2,2,2:SL$=STR$(S)+"%":SYM
BOL(35Ø,5),SL$,2,2,2:LINE(Ø,2Ø)-(639,2Ø),2
75Ø LOCATE 25,2Ø:COLOR 2,Ø:PRINT"The Land of the CAVE BEAR!..... by L. Hyre";
191Ø FOR WIPE=4 TO 24:LOCATE WIPE,1:PRINT STRING$(8Ø," ");:NEXT:LOCATE 25,1:PRIN
T STRING$(79," ");:COLOR 2,Ø:LOCATE 25,2Ø:PRINT"The Land of the CAVE BEAR!.....
by L. Hyre";:LOCATE 4,1:RETURN
195Ø LOCATE 1,1,Ø:COLOR 2,Ø:CLS:LINE(Ø,Ø)-(639,199),2,B:LINE(1Ø,5)-(629,194),2,B
:PAINT(3,3),2,2:SYMBOL(8Ø,2Ø),"The LAND of the",4,1,2
196Ø SYMBOL(22Ø,4Ø),"CAVE",6,8,2:SYMBOL(22Ø,1ØØ),"BEAR",6,8,2
211Ø LOCATE 17,1:COLOR 2,Ø:PRINT STRING$(8Ø," ");" BUT...Why do I have a vision
of 'Strange Hairy Men' carrying away something ? ";:COLOR Ø,2
224Ø SYMBOL(3ØØ,75),DG$,1,1,2,PT:OUT &H38,75
228Ø SYMBOL(27Ø,6Ø),"YEAR",2,1,2:SYMBOL(245,8Ø),"5ØØØØ BC",2,1,2

```



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MS-DOS's guardian of order holds sway over the entropic jungle of information in the land of the hard disk

The Hierarchal Tree

By Danny Humphress
Soft Sector Technical Editor

If you have been a loyal reader of this column, you may recall a brief discussion of MS-DOS's hierarchal directories in the very first installment of "Mastering MS-DOS." The directory system of MS-DOS is often one of the most difficult to comprehend aspects of the operating system. It need not be. Hierarchal directories add great organizational power to MS-DOS which is especially useful if your system includes a hard disk drive. Once you master the concepts, utilizing the multiple levels of directories is a simple matter.

The File Of Files

MS-DOS is essentially a filing system. Instead of paper records, it keeps track of files. A typical paper filing system consists of filing cabinets, drawers within the cabinets, hanging files in each drawer and manila folders in the hanging files.

If you are an employer looking for records on one of your employees in a division of your company, you would first go to the filing cabinet with personnel information, then to the drawer for the particular division, and then to the hanging file with that employee's records. Each time you make a decision (which file cabinet, which drawer, etc.), you narrow the mass of files down, getting closer to that one piece of paper you are looking for.

MS-DOS's directories work much the same way. You could have all your programs and files together, but would you organize a paper filing system that way? Probably not. Instead, you would group files together by what they are used for.

You could organize the files into a series of groups, or "directories." A directory would be set up for accounting. Within that directory would be directories for accounts payable, accounts receivable, payroll and general ledger. Within each of those directories would be the individual programs and data files pertaining to that aspect of your accounting procedures.

(Danny Humphress, SOFT SECTOR's Technical Editor, is the owner of a computer software and consulting firm in Louisville, Ky. Danny brings to SOFT SECTOR his extensive experience with small business computers and applications software.)

You may also want a main directory for word processing and smaller directories within the word processing directory for letters, reports, proposals and other main groups of documents.

With the relatively small amount of storage space on a floppy disk, chances are that most of the files on the disk are related. Thus, you may have little need for hierarchal directories. Hard disk drives, on the other hand, may contain literally hundreds of programs and files for dozens of different applications, making file organization essential.

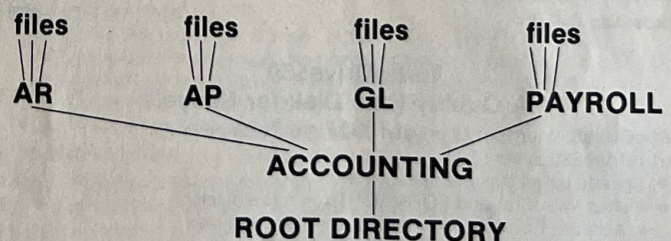
Family Tree

A hierarchal directory system has many resemblances to a tree. The trunk, branches and limbs are directories and the leaves are individual files.

Much of the terminology of MS-DOS directory systems is borrowed from the tree simile. For instance, the main directory from which all other directories "branch," is called the "root." The directories and files within a system are called the directory "tree." Working with directories becomes less abstract when you keep this in mind.

Figure 1 is representative of how the directories would be structured in the example of an accounting department discussed earlier.

Figure 1



The root is the directory from which all other directories originate. The AR, AP, GL and PAYROLL directories are within the accounting directory. Each of these directories contains a number of files. The levels of directories could go beyond this. In addition to files, any directory may contain other directories. Just as with limbs on a tree, there is no limit to the number of branches of directories.

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Directory Names

Directories are named with the same conventions used when naming any disk file except they may not have a three-character extension. A directory name should be chosen which will accurately describe the files and/or directories within it.

We could name the accounting directory in our example ACCTING and each directory within it AR, AP, GL and PAYROLL. These names would be easily understood and conform to the naming rules.

The root directory has no real name, but rather it is identified by a single backslash (\).

Making Directories

We've done a lot of talking about directories; let's get down to the nuts and bolts.

Before you can begin to put things into a directory, you must first create it on the disk. This is done with the MKDIR command. The command can also be abbreviated to MD.

Let's go ahead and create the ACCTING directory. Do this on a backup of an MS-DOS diskette or on your hard disk (unless you already have a directory by this name). Enter this command:

```
MKDIR ACCTING
```

Now do a directory and you will see that the ACCTING directory is listed within the root directory like this:

```
ACCTING <DIR>
```

The <DIR> after the name indicates this is not a normal file, but a directory. To see what's contained within the directory, do a directory of it:

```
DIR ACCTING
```

There will be two funny-looking entries which we'll talk about later, but no other files. Of course not — we haven't put any there yet!

What we *could* put in our ACCTING directory would be any combination of files or directories. We're going to add the four directories for the individual accounting programs and files: AR, AP, GL and PAYROLL.

Changing Directories

As it stands, when you enter an MS-DOS command, the files affected will be only those in the root directory unless you specify otherwise. That is because the root directory is the "current" or default directory.

While it is possible to gain access to almost any file from any directory by specifying a "path" to the file, it is much more convenient to switch the current directory to the one you'll be working in. This is done with the CHDIR (abbreviated CD) command.

To switch to the newly created ACCTING directory from the root directory, enter this command:

```
CHDIR ACCTING
```

Now do a directory with a simple DIR command to see that the files listed are those of the ACCTING directory.

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None of the root directory files are listed here because they are in a level "below" us.

To demonstrate that the files of the root directory are still there, move back down to it and do a directory with these commands:

```
CHDIR \  
DIR
```

Remember the root directory is symbolized by a single backslash (\).

Let's move back to the ACCTING directory to create our other subdirectories. Enter this command:

```
CD ACCTING
```

Remember, CHDIR may be abbreviated to CD!

Enter these four commands to create the four subdirectories:

```
MD AR  
MD AP  
MD GL  
MD PAYROLL
```

We used the abbreviated form of MKDIR here to create the four directories. Do a DIR and see for yourself that there are now four new directories.

Now move to the payroll directory. Since we are already in the "parent" of PAYROLL, ACCTING, changing to the subdirectory is done with a simple CHDIR command:

```
CD PAYROLL
```

Do a DIR of this directory. It's empty because it has just been created. This is the directory where we would put our payroll-related files and programs.

Where Am I?

When directory systems become complicated labyrinths, it becomes difficult to remember just where you are within the great maze. There is an easy way to refresh your memory, though, with the CHDIR (CD) command. If you enter the command without any parameters, it will tell you which directory you're in and all the directories between the root directory and where you are now. Go ahead and try it. Since we're still in the PAYROLL directory, you should see:

```
\ACCTING\PAYROLL
```

Paths

Whenever you use a command such as CHDIR, you specify a "path" telling MS-DOS how to get to that specific directory from where you are now. If the directory you're going to is just one level away, getting there is just a matter of specifying the name. If, however, you're farther away from the target directory, you must specify a path for MS-DOS to follow.

We'll do some examples of paths, but first we must move back down to the root directory with this command:

```
CHDIR \  

```

Now that we're in the root directory, suppose we wanted to move to the AR directory. We could do it with two commands by first moving to the ACCTING directory and then to AR, but there is an easier way. Enter this command:

```
CHDIR ACCTING\AR
```

Using this command, we specified the complete path from the root to the AR directory. Use the CHDIR command to verify that we have arrived.

The backslash, when used this way, separates directories or filenames.

Now suppose we want to go from the AR directory to the GL directory. Refer to Figure 1 again to see their locations. If you think of the lines on the illustration as roads, you see that to get from AR to GL, you must first travel back to ACCTING. Therefore, you need to specify more than just CHDIR GL; you must specify an entire path from the root to the GL directory.

The steps we want MS-DOS to follow could be outlined as: 1) move back down to the root (\) directory; 2) move to ACCTING; 3) move to GL. This can be done with this command:

```
CHDIR \ACCTING\GL
```

The first backslash (\) tells MS-DOS to start at the root directory, ACCTING moves us to the ACCTING directory, the next backslash separates the directory names, and GL moves us into the GL directory. This is what is known as a path specification. Notice we had to start the path at the root and specify every directory in between.

A Little Quiz

Which one(s) of the following commands would take us from the AR directory to PAYROLL? Refer to the illustration in Figure 1 if necessary.

- A) CHDIR ACCTING\PAYROLL
- B) CHDIR \ACCTING\PAYROLL
- C) CHDIR \PAYROLL\ACCTING

Did you think it was 'A'? If so, you were close but not quite right. Without putting a leading backslash (\) before ACCTING to take us back down to root, MS-DOS thought you were trying to go to a directory called ACCTING within the current (AR) directory.

If your answer was 'B,' you were absolutely correct! You specified the entire path starting at the root directory and moving through ACCTING to PAYROLL.

If you answered 'C,' you were pretty far off base. You told it to go to the root directory (all right so far) and then to the PAYROLL directory. Since PAYROLL is not a part of the root directory, rather it is part of ACCTING, the path would bomb at this point.

There's So Much More!

Just about every MS-DOS command can use path specifications. Some commands, such as MKDIR and CHDIR, are specifically designed to help you manage directory file systems. There are many more things we can do with these wonderful directories and many other commands to help us, as you shall see in the next installment of "Mastering MS-DOS."



Knowing how much to invest *now* to ensure your children's future education is one of the benefits of understanding "Present Value"; with this program you can begin . . .

Determining Present Value

By Robert E. McCoy

% % % % % %

Have you ever wondered how much money it would take to invest at a particular moment so that you could count on a certain return at some point in the future? Suppose, for example, that you have some money and are interested in setting up an endowment for your children's college education. It is relatively easy to estimate future tuition costs by contacting the institutions themselves; however, you still wouldn't

\$ \$ \$

know how much to invest *now* to be prepared for that cost in the future.

The accounting convention, termed "present value," is designed to answer this type of question based upon two assumptions. The first is that the future amount of money can be reasonably estimated and the second is that the rate of return or interest can be closely predicted. While these assumptions may put some people off because of the lack of precision involved, it is wise to recognize that some planning is better than no planning at all.

Various trade associations are often sources of fairly reliable estimates of future costs in their fields since it is in their best interests to be as well prepared for the future as possible. Financial institutions themselves implicitly provide predictions about rates of return when they publish interest rates for long-term certificates of deposit. Armed with the appropriate data, one can then determine how much to invest now — the present value — to meet that future need.

The BASIC program for determining the present value is relatively simple as can be seen from the program flow chart or diagram and program listing.

(Robert McCoy has a master's degree in management information systems and has 15 years of managerial and supervisory experience in data processing. He can be contacted at 3307 Chillum Rd., Mt. Rainier, MD 20712; 301-864-7859)

Lines 100 through 180 of the listing identify the program, instruct in its use, and accept input data. Note that the largest number possible is 9,999,999.99. If larger (or smaller) ones are desired, simply adjust the print fields — indicated by the series of number signs (#) — accordingly. No dollar signs or commas are permitted during data entry as the numerical input fields will not accept them. For example, \$1,234,567.89 is entered as merely 1234567.89.

\$ \$ \$

\$ \$ \$

\$ \$ \$

Since we normally speak of interest rates as percentages rather than as hundredths of a whole, the program is set up to handle the rate of return in this fashion. Rates can include “hundredths of percent” (as low as .01 percent and as high as 99.99 percent) and are to be entered without the percent sign (%) for the same reason given above. That is, 10.25 percent is an acceptable entry when entered as 10.25.

To avoid making the program unnecessarily complicated, only whole numbers (one to 99) are accepted for the “year” input. Long-term personal plans rarely dictate greater precision in any case.

Lines 190 to 210 convert the interest rates from percentages into decimal numbers, calculate the present value amount, and then display it.

Note the use of the number sign (#) after some of the variables. This forces the computer to use double precision in its calculations and outputs. Without this feature, any number larger than six digits would be rounded up to only six significant places, reading from left to right. For example, without double precision, the amount \$1,234,567.89 would be rounded to \$1,234,570.00 and accuracy would suffer. Further, a number larger than 9,999,990.00 would be rounded up to 10,000,000.00 and thus be too large for the print field, causing an unwarranted error message.

Lines 220 to 280 present the opportunity to obtain a listing of the present values for each year of the investment, return to the input stage to use new

input data, or to exit the program.

Typing in the letter ‘X’ (uppercase and without the quote marks, please) and pressing RETURN sends control of the program to Line 610, the end. Typing the letter ‘R’ and pressing RETURN directs control of the program to Line 110 where the process begins anew. Any other response, including merely pressing RETURN, allows control of the program to “fall through” to the next line.

Lines 290 through 380 calculate and display the present value amount by each year of the investment period. An appropriate heading is provided to identify the input data used since the screen is cleared to prevent a cluttered appearance. A dimension statement is used so that the optional printout can be done without having to recalculate the yearly values.

The next section of the program, Lines 390 through 450, offer the option of obtaining a printout of the present value listing, returning to the input stage for different values, or exiting the program.

As before, typing the letter ‘X’ and pressing RETURN sends control of the program to Line 610, the end, while typing the letter ‘R’ and pressing RETURN directs control to the input stage (Line 110), to restart the process. Any other response, including merely pressing RETURN, allows control to pass to the next program line.

Lines 460 to 540 cause a printout of the present value listing by each year of the investment period, just as it was previously displayed on screen.

Finally, Lines 550 through 600 allow the choice of returning to the input stage to compute a new present value using different input data, or of exiting the program.

It may be helpful to briefly illustrate the program with an example. Let’s continue the one about the college endowment (it could just as easily be investing for a mortgage down payment or building cash for a Sanyo 775). Assume that a little investigation

reveals that four years at good ol’ State U will probably cost \$40,000 in the year 2000 and that your local bank is offering 15-year certificates of deposit (coincidentally, the amount of time you have from 1985 to prepare for the outlay) at an interest rate of 10.25 percent compounded annually.

At the first prompt, “Amount returned in future?,” you enter your goal of \$40,000 as 40000. For the second prompt, “Annual Interest Rate As

Percent?,” enter 10.25. In response to the third, “Years Until Return Occurs?,” you enter 15. Almost immediately after you press the RETURN key, the answer of how much you need to invest now is displayed as “Present Value = \$9,255.10.” Choosing to view the yearly present value listing will present the screen display as shown in the accompanying figure. The printout will be exactly the same.

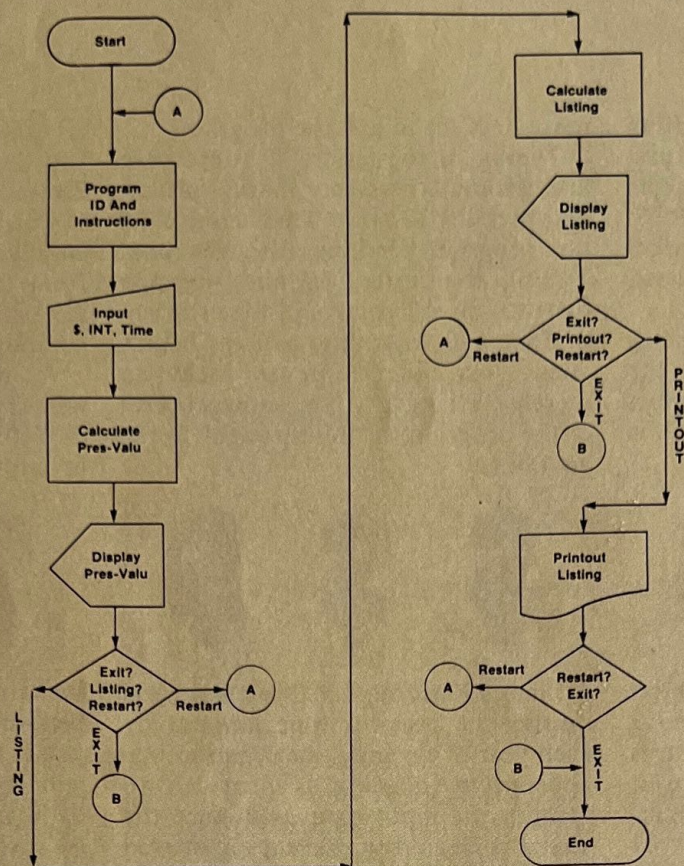
This listing illustrates two things. First, it shows the amount of investment needed at that particular year *prior to the future* in order to meet the goal. Note that the present value listing for year 15 shows \$9,255.10. This is the amount needed to invest now to achieve your goal of \$40,000 in 15 years at an interest rate of 10.25 percent, the same value displayed on the screen as “Present Value =.”

Second, it is also what any investment made on schedule is worth at that time, the number of years prior to the future return.

Looking at year 7 of the figure, you can see that you would have to invest \$20,202.72 at 10.25 percent in order to accrue \$40,000 in seven years. You also know that, after eight years, your original investment of \$9,255.10 should be worth \$20,202.72 if the rate of return is 10.25 percent.

By using the present value technique, it is easy to answer “What if . . . ?” questions about future money requirements. There is also a greater psychological inducement to invest for the future when one can get a better “picture” of the results of those efforts.

Diagram of Program Flow Chart



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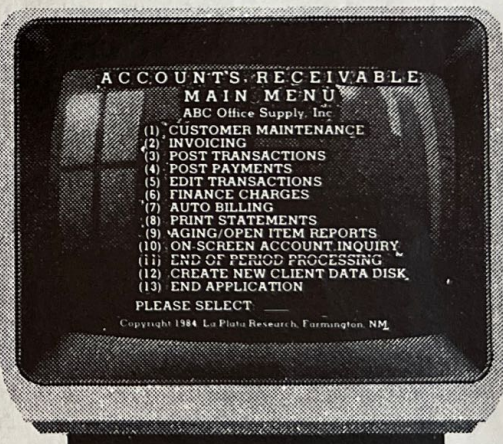
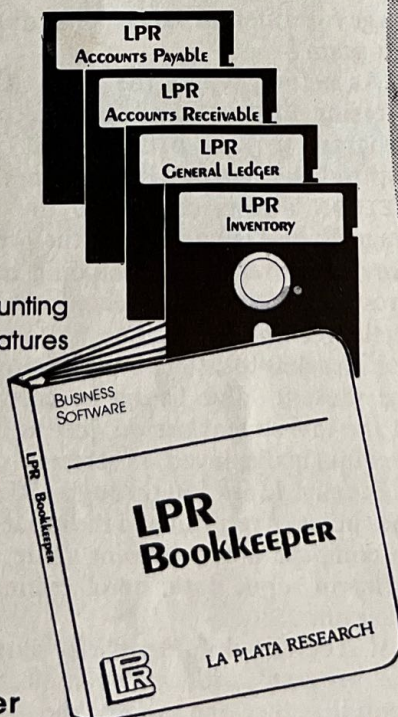
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The listing: PRESVALU.BAS

%

```
100 CLS
110 PRINT "PRESENT VALUE": PRINT
120 PRINT "THIS PROGRAM WILL CALCULATE A TABLE OF PRESENT VALUES"
130 PRINT "BASED UPON YOUR ANSWERS TO THE FOLLOWING QUERIES. DO"
140 PRINT "NOT USE COMMAS, DOLLAR SIGNS, OR PERCENT SIGNS. NOTE"
150 PRINT "INTEREST RATES MUST BE PERCENTS (EX: 9.76 VS .0976)."
```

\$

```
160 PRINT: INPUT "AMOUNT RETURNED IN FUTURE";AT#: IF AT#<>0 THEN A#=AT#
170 PRINT: INPUT "ANNUAL INTEREST RATE AS %";IT: IF IT<>0 THEN I=IT
180 PRINT: INPUT "YEARS UNTIL RETURN OCCURS";YT: IF YT<>0 THEN Y=YT
190 R=I/100
200 PV#=A#/(1+R)^Y
210 PRINT: PRINT USING "PRESENT VALUE = $#,###,###.##";PV#
220 PRINT
230 PRINT "FOR A YEARLY LISTING OF THE PRESENT VALUES FOR THIS, MERELY"
240 PRINT "PRESS THE RETURN-KEY. TO EXIT THE PROGRAM, TYPE THE LETTER"
250 PRINT "'X' AND PRESS THE RETURN-KEY. TO RESTART THE PROGRAM USING"
260 PRINT "OTHER VALUES, TYPE THE LETTER 'R' AND PRESS THE RETURN-KEY."
270 PRINT: INPUT X$: CLS
280 IF X$="X" THEN 610 ELSE IF X$="R" THEN 110
290 PRINT "PRESENT VALUE LISTING"
300 PRINT USING "BASED UPON $#,###,###.##";A#;
310 PRINT USING "AT ##.##";I;: PRINT USING "% DUE ##";Y;
320 PRINT "YEARS IN THE FUTURE": PRINT
330 DIM P#(Y)
340 FOR YY=1 TO Y
350 P#(YY)=A#/(1+R)^YY
360 PRINT USING "YEAR ##";YY;
370 PRINT USING "$#,###,###.##";P#(YY)
380 NEXT YY
390 PRINT: PRINT
400 PRINT "END OF THE PRESENT VALUE LISTING. FOR A PRINTOUT, TURN ON THE"
410 PRINT "PRINTER AND MERELY PRESS THE RETURN-KEY. TO EXIT THE PROGRAM,"
420 PRINT "TYPE THE LETTER 'X' AND PRESS THE RETURN-KEY. TO RESTART WITH"
430 PRINT "OTHER VALUES, TYPE THE LETTER 'R' AND PRESS THE RETURN-KEY."
440 PRINT: INPUT X$: CLS
450 IF X$="X" THEN 610 ELSE IF X$="R" THEN 110
460 PRINT "NOW PRINTING THE PRESENT VALUE LISTING"
470 LPRINT "PRESENT VALUE LISTING"
480 LPRINT USING "BASED UPON $#,###,###.##";A#;
490 LPRINT USING "AT ##.##";I;: LPRINT USING "% DUE ##";Y;
500 LPRINT "YEARS IN THE FUTURE": LPRINT
510 FOR YY=1 TO Y
520 LPRINT USING "YEAR ##";YY;
530 LPRINT USING "$#,###,###.##";P#(YY)
540 NEXT YY
550 CLS
560 PRINT "END OF THE PRESENT VALUE LISTING PRINTOUT. TO RESTART WITH OTHER"
570 PRINT "VALUES, PRESS ONLY THE RETURN-KEY. TO EXIT THE PROGRAM, TYPE THE"
580 PRINT "LETTER 'X' AND PRESS THE RETURN-KEY."
590 PRINT: INPUT X$: CLS
600 IF X$="" THEN 110
610 END
```

%

\$

S

More On Sanyo BASIC Graphics

By Fred Blechman
Soft Sector
Contributing Editor

Last month we began looking at some of the color and graphics capabilities of Sanyo BASIC. As you have probably read many times in the pages of **SOFT SECTOR** and elsewhere, Sanyo BASIC is widely respected for the power and flexibility of some of its graphics commands. We will continue now with a look at some of those commands.

High-Resolution Graphics

The Sanyo MBC-550/555 is always in the high-resolution graphics mode. Figure 1 shows the coordinate system

(Fred Blechman, an acknowledged authority on home computers, has written several articles and books related to microcomputers. He is self-taught in electronics and computer BASIC programming and specializes in writing for beginners. This article is based on material from a forthcoming book by the author, Sanyo MBC-550/555 Beginner/Intermediate Guide, now available from Blechman Enterprises, 7217 Bernadine Ave., Canoga Park, CA 91307; 818-346-7024.)

Copyright© 1985 by Fred Blechman.

of 640 dots (frequently called "pixels" as a contraction of "picture elements") across and 200 down, starting at the upper left corner. The allowed numbers are zero to 639 and zero to 199, unlike the **LOCATE** command where zero is not allowed.

What really makes the Sanyo unique among most other MS-DOS micros is that, without optional equipment, each of these 640-by-200 dots (128,000 pixels) can be **COLORed** with any of the eight colors, and text can be freely mixed with graphics.

The SYMBOL Command

The Sanyo has a very special and powerful command not available, as far as I know, on other micros. The **SYMBOL** instruction allows you to place any text starting in any screen pixel location, magnified in any width and any height, in any of the eight colors, and in any of four 90-degree orientations! The only restriction in size and placement appears to be that the expanded characters cannot extend beyond the top or left side of the screen (or outside the maximum "world coordinates" described later).

The syntax is confusing at first, but you'll quickly see how versatile and useful this command is with some simple examples. Here's the syntax:

```
SYMBOL(X,Y)"text",A,B,C,D
```

The X and Y values are the row and column (from zero to 639 for X, zero to 199 for Y) for the upper left corner of the first character of the "text." The text can be anything you can type in from the keyboard or describe with a **CHR\$** number.

'A' is a number from zero to 255 to indicate the horizontal magnification, with each number making the character eight dots wider. The 'B' (from zero to 255) controls the vertical height, with each number making the character eight dots higher.

For example, a regular character is eight-by-eight dots. If you used A=5 and B=7, the **SYMBOL** characters would each be 40 dots wide and 56 dots high!

The variable C is for **COLOR**, from one to seven, with two (green) as the default. The variable D is the 90-degree orientation, from zero to three, with normal horizontal as default zero. A one here makes the **SYMBOL** vertically downward, a two makes it upside down, and a three makes it vertically upward. In all cases, the upper left corner of the first character is the starting point. This is illustrated in Listing 1.

All eight-by-eight characters are not square at all, but actually almost twice as tall as wide when drawn horizontally in the normal fashion. When a character is printed vertically instead of horizontally, its height and width relationships are exchanged, leading to unexpected results.

Prove this to yourself by **RUNning** the following four-line program:

```
10 COLOR 7,0:CLS
2
3 SYMBOL(200,75),"A",10,10,7,0
4 SYMBOL(400,75),"A",10,10,7,1
40 GOTO 40
```

Although the **SYMBOL** command in each case shows 10 for both vertical and horizontal character magnification, look how different the first 'A,' printed

horizontally appears compared to the 'A' printed vertically.

Advanced Graphics

An advanced concept of graphics, used by later versions of IBM PC BASICA, and also available on the Sanyo MBC-550 series, is that of dual graphics coordinate systems — "world" coordinates and "screen" coordinates. Several books have been written about IBM PC graphics that go into great detail on this concept. It is complex and intended for advanced graphics programming, so we won't go into much detail here.

World Coordinate System

Briefly, the "world" coordinates can extend from zero to 32,767 both horizontally and vertically. Within that vast coordinate system you can use the WINDOW statement to specify any size within those limits, and that will be the area of the world shown on your screen through "viewports."

VIEWports

One or more rectangular VIEWports can be specified for your display, located within the horizontal limits of zero to 639 and the vertical limits of zero to 199 — the screen display limits what you are used to. These are referred to as the screen coordinate system.

The VIEWport then will display anything within the WINDOW area with proportions automatically scaled by the computer. This means if you have a large WINDOW, everything will be scaled down to fit within the VIEW size and shape. If, on the other hand, you have a WINDOW smaller than the VIEWport, then each VIEWport will show less than

the entire normal screen display. Within the VIEWport, the original screen coordinate maximums of 639 and 199 still apply.

The POINT statement is used to translate coordinates between the world and screen coordinate systems, and its use is beyond what we cover in this article.

Actually, you really don't need to know any of this unless you have intentions of specializing in graphics. Both the WINDOW and VIEW, unless you specify otherwise in your program, have default values of zero to 639 and zero to 199, and have no affect whatsoever for normal graphics.

Your Sanyo Does WINDOWS

A screen sample is worth a thousand words, so type and ENTER Listing 2, then RUN it to see the effect.

The WINDOW statement in Line 20 is not needed, since the coordinates shown are the default numbers on RUN. We'll change them shortly so you can see the effect.

Lines 30, 50 and 70 set up three VIEWports on your display, in different shapes and locations, with different colored backgrounds and borders. For example, Line 30 uses a ,4,7 at the end for background COLOR 4 (red), with border COLOR 7 (white). The syntax is:

VIEW(upper-left corner coordinates
x,y)-(lower-right corner coordi-
nates x,y), background color,
border color

If you omit the colors, they default to the screen's background color. If you

just want a border color but no different background color, be sure to use two commas before the background color number.

The SUBroutine in Line 100 places the word "Sanyo," in enlarged size, at about the center of each VIEWport. Notice, when you run this, how the word "Sanyo" is adjusted to the proportions of the VIEWport, and how it maintains its relative location.

Try changing the VIEWport locations and proportions, just to see the effect. You'll notice that a "new" VIEWport can overlap and erase an "old" VIEWport.

Now change the WINDOW dimensions to see the effect. Try WINDOW(0,0)-(300,300). Although the VIEWports have not changed, the narrower and taller WINDOW cuts out part of the "Sanyo" and raises it within the VIEWport. Remember, the VIEWport, despite its location or shape on the screen, maintains zero to 639 and zero to 199 maximum coordinates within itself.

Changing to WINDOW(0,0)-(800,400) moves "Sanyo" up and to the left since the WINDOW is now larger than the maximum VIEW dimensions of 639,199. Notice, also, that the tail of the 'y' in "Sanyo" has been cut off on the wide, but short VIEWports, due to reportioning.

Further information on WINDOW and VIEW can be found in advanced graphic texts for the IBM PC.

PUT, GET and GCURSOR

Three more statements associated with advanced graphics are PUT, GET

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and GCURSOR. PUT and GET, which are graphics array plotting commands, require at least 256K in the Sanyo MBC-550 series. GCURSOR assigns the two screen coordinates of its present location to two variables for later use when ENTER is pressed. The use of all three of these statements is well beyond

the scope of this article, and can be found in books devoted especially to advanced computer graphics.

Two No-Nos

SCREEN and DRAW statements are used extensively in IBM PC BASICA. DRAW,

which allows you to sequentially trace a line, is not available in Sanyo BASIC. SCREEN is a reserved word in Sanyo BASIC, but does not appear to be implemented in the interpreter. The computer not only ignores SCREEN, but ignores anything following the keyword SCREEN. Don't use it.

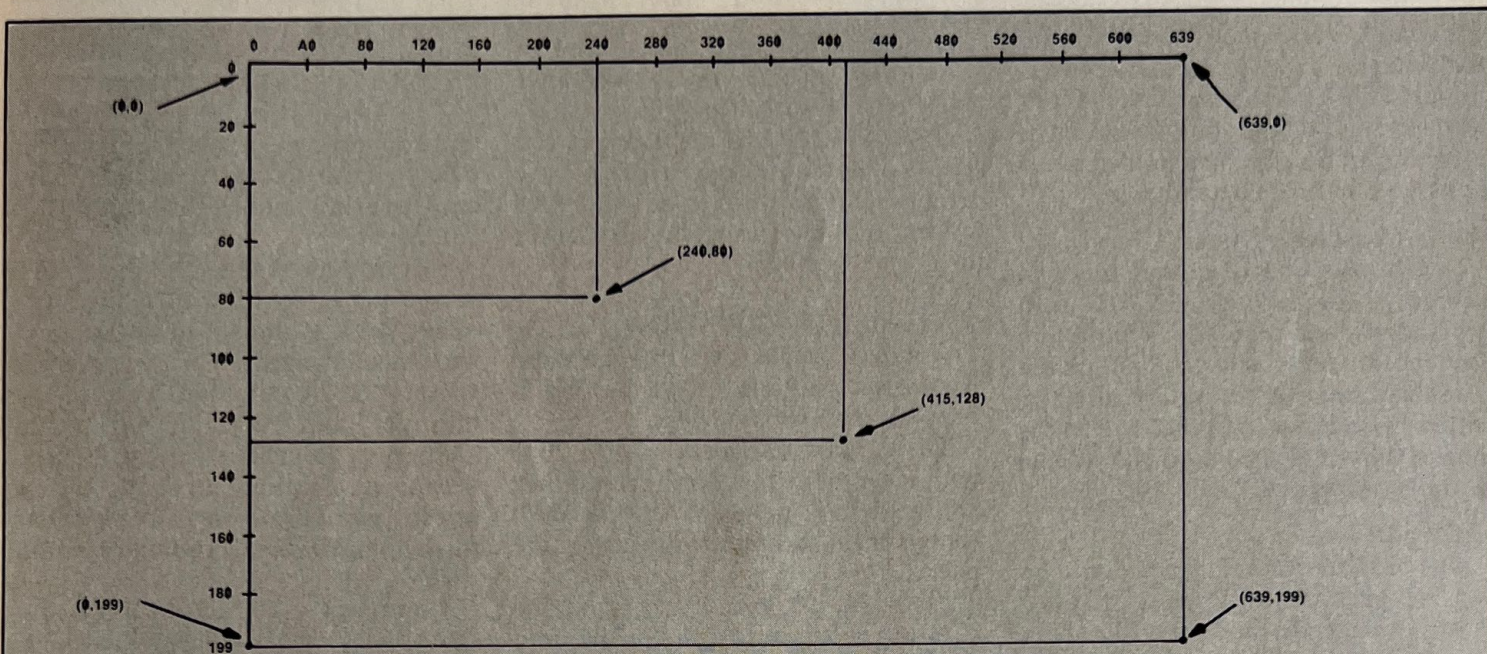


Figure 1. High-Resolution Graphic Coordinates (X,Y).

Listing 1: LIST-1.BAS

```
10 CLS
20 SYMBOL (300,100), "SANYO", 8, 7, 3, 0
30 SYMBOL (300,100), "SANYO", 2, 8, 7, 1
40 SYMBOL (300,100), "SANYO", 7, 6, 5, 2
50 SYMBOL (300,100), "SANYO", 2, 5, 6, 3
60 GOTO 60
```

Listing 2: LIST-2.BAS

```
10 CLS
```

```
20 WINDOW(0,0) - (639,199)
30 VIEW (320,100) - (639,199)
40 GOSUB 100
50 VIEW (50,100) - (300,150), 1, 6
60 GOSUB 100
70 VIEW (100,25) - (600,90), 2, 3
80 GOSUB 100
90 END
100 SYMBOL (220,80), "SANYO", 5, 5, 6, 0
110 RETURN
```

DO YOU HAVE THESE PROBLEMS

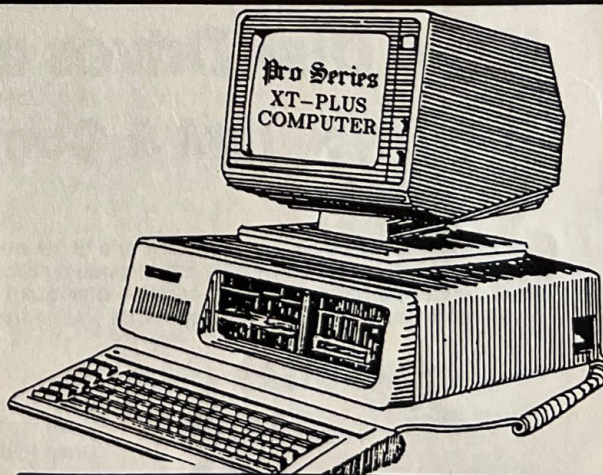
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The IBM-compatible RGB monitor is a good one, but you'll find a few problems associated with it when you use it with your Sanyo. Now you can . . .

Have Your Monitor Compatibility and Vertical Interlace, Too!

By Ron Tevonian

Sanyo users will face some incompatibility problems when they try to use IBM-compatible RGB monitors with MBC-550 series computers. In addition to the relatively obvious fact that the IBM cable packed with the monitor doesn't mate with the DIN socket on the computer, there is also a problem with the horizontal and vertical sync pulses; the Sanyo computer sends pulses which go to zero from a normal +5 volts, while the monitors expect a +5 volt pulse from a normal ground level.

While you can buy a connector cable which will solve both problems (Micro World Computer Store, 1905 Vestal Pkwy. East, Vestal, NY 13850, 607-785-4500) for about \$50, there is a simpler and cheaper solution available to those who are not afraid of a soldering iron. The diagram in Figure 1 shows a circuit which will invert the sync pulses using half of a "Quad 2-Input NOR Gate." (Radio Shack, Number 4001) Each of the NOR gates has one of its inputs tied to ground. This results in the output simply being the inverse of the input; +5 volts in, gives zero volts out, and vice versa.

Construction is relatively simple. You can steal the necessary 5-volt power from inside the computer or you can be lazy, like me, and use a 9-volt battery with a switch. The cable-mounted 8-pin DIN plug and the 9-pin 'D' socket are also available from Radio Shack, and so are a variety of small

utility boxes to contain the socket, switch, battery, and Integrated Circuit.

With this simple little project, we have solved the sync pulse incompatibility problem between the Sanyo MBC-550/555 and the IBM-compatible RGB monitors. For many of you, this may be all you want or really need. But for those of you who don't mind the project getting a little more complicated, we can go ahead and deal with another problem involving the use of Hi-Res RGB monitors.

Vertical Interlace Generator

Can a monitor actually be too good? A high quality monitor, with very small spot size and high video band width, will give nice crisp graphics and alphanumerics — just as a fine-point pen will allow better detail than a dull crayon! But while the horizontal resolution improves with smaller spot sizes, the vertical resolution can suffer. With the vertical dimension of your display divided into only 200 scan lines, thinner lines will have visible spaces between them, resulting in a display with vertical lines which look "dashed," and filled areas which look as if they have horizontal stripes.

In a standard television picture the vertical dimension is divided into about 500 scan lines. However, in one vertical sweep the picture only traces out every

(Ron Tevonian is a director of engineering for AT&T Technologies. He has been involved in both hardware and software developments, using small computers, for over 25 years. The author may be contacted at 624 W. Franklin St., Wheaton, IL 60187; 312-668-1976)

other line and then fills in the missing lines in the next vertical sweep. This technique is called "vertical interlacing." The TV signal includes a special provision which forces the receiver to move the scan lines in alternate vertical sweeps down about a half space.

We can use the same technique to solve the vertical granularity problem in our computer displays. By making alternate vertical sweeps, move down about a half space and we will actually get what looks like 400 scan lines instead of 200. Of course we can't generate new picture information out of thin air; the computer sends out the same picture information for each sweep. Therefore, the picture we see will actually consist of pairs of identical scan lines, each drawn during alternate vertical sweeps.

To force the monitor to produce an "interlaced picture" we need to delay the start of every alternate vertical sync pulse by about one half of a horizontal scan interval — about thirty microseconds will do. During this interval, the spot will not only have moved halfway across to the right but also about halfway down toward the start of the next normal scan line. The attached schematic shows a circuit which does the job. It also takes care of the sync pulse inversion problem so as to allow the use of any IBM-compatible monitor. I use it with my AMDEK Color 700; the improvement is incredible!

The Circuit

The circuit is built using two ICs from Radio Shack, (under three dollars). There are also six capacitors and four resistors. IC1 through IC4 are sections of a Quad 2-input NOR Gate. Each gate has two inputs and one output. Whenever *both* inputs are at zero volts, the output will go to +5 volts. Otherwise, the output remains at zero volts. One gate (IC4) inverts the horizontal sync pulse produced by the computer to make it acceptable to the monitor. The incoming signal from the computer normally sits at +5 volts. When the computer wants to trigger a vertical sweep, this signal briefly goes to zero. Since the second input to IC4 is always at ground, this causes the output to swing from zero to +5 volts.

Now consider the three gates, IC1, IC2 and IC3. If Pin 8 of IC3 were at zero volts, then all three of these gates would function just like IC4. The vertical sync signal from the computer

would be inverted once by each gate, arriving out of IC3 as a +5 volt pulse — just what we need. These gates introduce a tiny delay as it responds to the change in input (we'll see later why that matters). IC5 and IC6 are two halves of a 556 Dual Timer. Each of these will respond to a negative-going trigger pulse and produce an output pulse, the length of which is determined by the values of a resistor and capacitor connected to the 'T' (Threshold) input.

Timing can vary from microseconds to hours for our application R1 (15k ohms) and C1 (.0015mfd) are chosen to give a pulse of about 30 microseconds

the vertical sync pulse. That's just fine, except we only want to delay *every other* pulse! Read on.

The other half of the dual timer IC is IC6. This one is set to give pulses of about 25 milliseconds by the values of C2 and R2. This timer is triggered by the negative-going transition of the signal coming out of IC1 (which happens to be the *end* of the vertical sync pulse). Vertical sync pulses occur 60 times per second (16.66 milliseconds), so the 25 milliseconds represent about one and a half pulse intervals. This means that at the end of a vertical sync pulse, IC6 will fire and stay on until

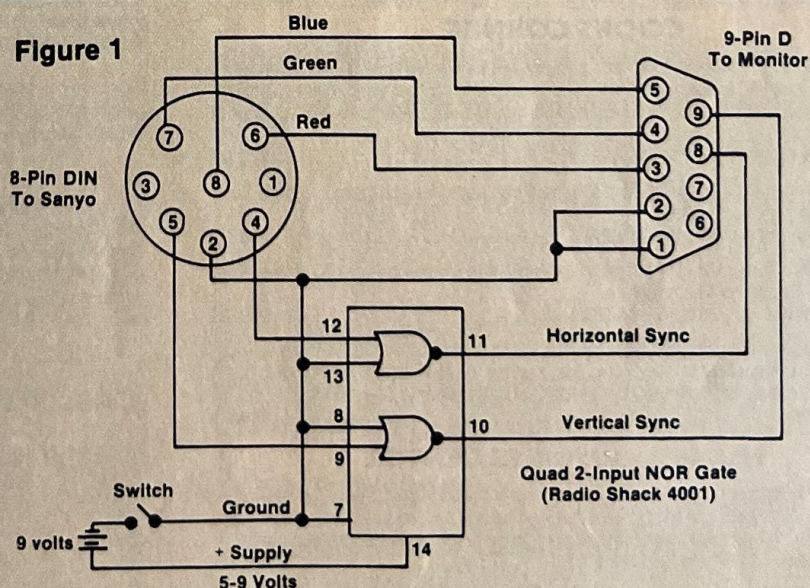
"Can a monitor actually be too good?"

at the output (Pin 9 of IC5). This output is normally at zero volts and swings to +5 volts during the 30 microsecond interval. This output is connected to one of the inputs of the NOR gate, IC3. That means that, as long as this terminal (Pin 8 IC3) is at +5 volts, there can be no vertical sync pulse. Now we see why the delay in the operation of IC1 and IC2 was important; we needed time to make sure that the timer (IC5) had a chance to trigger before the other input arrived at IC3. What we have essentially done, is sliced the first 30 microseconds off the leading edge of

almost 10 milliseconds past the next pulse — which it will ignore. Hence, it will fire once every other sync pulse. The output of IC6 is connected to the Reset pin (Pin 10) of the first timer and has the effect of preventing it from operating. The IC5 timer, which we used to shave 30 microseconds off the leading edge of the vertical sync pulse, therefore can only do its thing to alternate pulses.

Power for the circuits can be gotten from the computer, but I chose to build a small +5 volt supply. A cheap transformer giving anything from six

Figure 1



Combination Adapter And Sync Pulse Inverter

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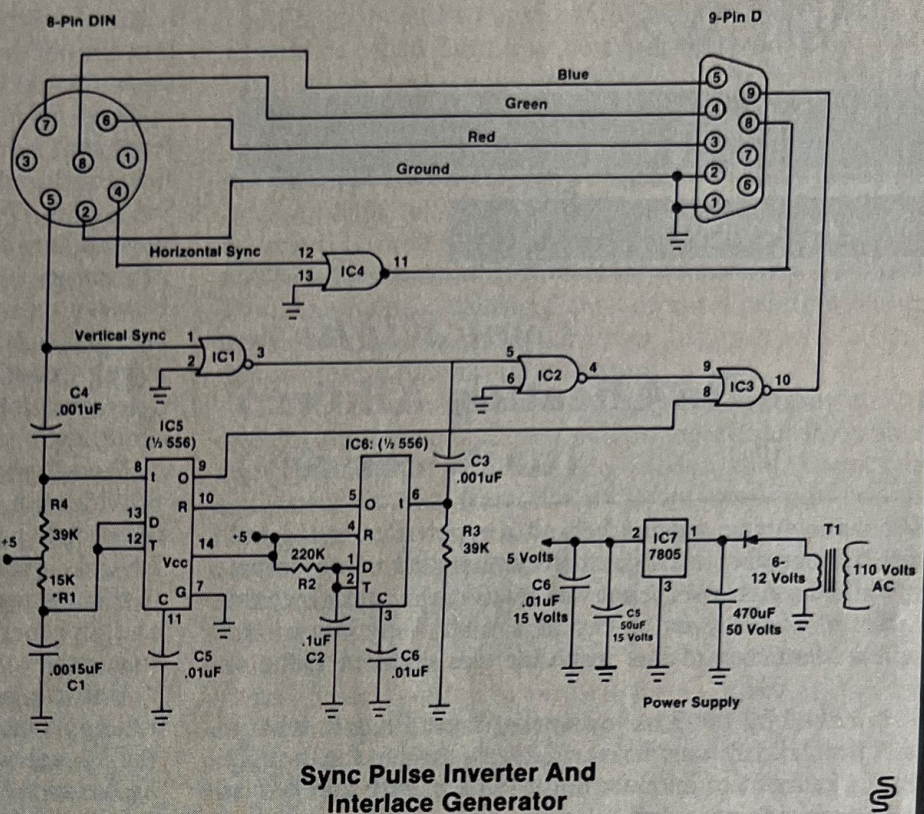
to 12 volts can be used. A diode and capacitor will give reasonably smooth DC input to a voltage regulator IC (IC7) which supplies regulated +5 volts. The capacitors provide filtering from surges and transients.

Construction

I managed to pack all the parts except for the transformer into a 3.5 by 2.5 by 1.5 inch utility box, using a hand-drawn etched printed circuit board. It was fun, but I wouldn't do it again. I suggest using a more generous box with IC sockets and terminal strips laid out for easy soldering. I'm not going into any more detail because I expect that people who are inclined to tackle a project like this are familiar with basic layout and construction.

One final note: This circuit is relatively simple because the vertical sync pulses are delivered to an RGB monitor on a dedicated wire. The composite video signal generated for monochrome monitors includes the video signal and horizontal and vertical sync pulses, combined in a way which makes it impossible to generate interlace in any simple way.

Figure 2



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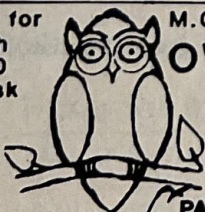
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REVIEWS



Software review

Type Right — No Cheating Allowed (or Necessary)

When the Army put me behind a typewriter in the fall of 1969, I cheated. Minutes before the start of an actual test, while the Army sergeant was reading the rules, I would be quietly — one painful key at a time — typing in the first few sentences of the test that was right in front of me.

I *squeaked* by the 35-words-per-minute limit at that. It wasn't that I didn't want to learn, it was just that the thought of hours in front of an electric typewriter, with an exercise book at my side, was dull.

Enter, some 16 years later, MichTron's *Type Right* program. I'd kept up, mind you, but it was a passably quick and refined-over-time method of "hunt and peck" that I was employing, and the program 'knew' it.

Type Right is incredibly simple to operate. Insert the disk (after backing it up or placing it on a system disk), type 'tr,' hit RETURN and you're off! And I do mean off. *Type Right* asks for your name, spreads it out across the screen in very large letters and launches into a lesson.

You then have two choices — Drill or End. Since you just sat down, you follow the screen instructions and hit RETURN.

It is a compelling program. The exercises are short (ff jj ll dd — RETURN, as sad as a — RETURN) and after a number of them, the program displays your score, indicating your average words-per-minute, total number of errors and accuracy percentage. You are offered the option of continuing to drill the same keys, learning new keys, or moving to paragraphs.

Meanwhile, *Type Right* is keeping track of your progress and assigning you a level from one to 20 based on the number of lessons you have completed. A "Names Utility" program allows you to modify the names, delete one or all of them and, most importantly, gives you a glimpse at your level of progress.

Unfortunately, the documentation is a little unclear as to how you execute this particular portion of the program. It states, in the eight-page instruction booklet that accessing the "Names Utility" program involves hitting the PF5 key at the lower, left-hand corner of the keyboard. What made this particular instruction confusing, at first, was that it did not state just *when* to do this — at the A: prompt? during a drill? A call to MichTron solved the problem. The PF5 key should be struck when the screen displays

the Names Menu (when it displays your name and other choices for exercises).

There are more sophisticated typing programs, some that are designed to involve the student in a video game which requires increasing degrees of typing skill to win. But the bottom line for any such program is its ability to improve skills.

Type Right will do this. The key to its success is the feedback involved. The program, unlike your friendly neighborhood typing instructor, does not care at all about your score. *Type Right* reports your progress privately and very matter-of-factly. It, unlike a formal course with an instructor, is incapable of failing you and the interaction between typist and program is such that your own progress becomes a challenge. I have sat down to practice and found myself redoing exercises with a sense of purpose and determination. ("This time, I'm going to hit 97 percent accuracy!")

Type Right is a stand alone program. The documentation provides the new student with basic instructions concerning the proper position for hands (A, S, D, F for the left hand, J, K, L, ; for the right), displays the keyboard on screen to demonstrate which hands are used to strike which keys, and, in general, prepares the typist (from novice to expert) for work.

Unfortunately (or fortunately, if learning to touch-type is important to you), you can't cheat. You can look at the keyboard or get frustrated and yank the disk out, but as far as measuring your skills, the program is merciless. It will display a 2 percent accuracy percentage as blithely as it displays perfection.

However, there's nothing to prove to anybody but yourself, and since improvement — not grades — is the point, there isn't any need or desire to cheat.

Like most things in life, you get from *Type Right* what you put into it. If you're lazy or unmotivated, the program will not flash any warnings on the screen ("Caution: Skills are slipping"), but properly utilized, it will do what it promises — improve your typing skills, whether you're a beginner or an advanced typist seeking a refresher course.

One last note to prospective users with monochrome monitors: A separate page of the documentation for *Type Right* warns that monochrome monitor users might experience "flashing or seemingly missing information" in which case, a series of DIP switches might have to be reset. These switches are located in the left, rear corner of the machine and require the removal of the unit's cover. The proper settings are described in detail. As a monochrome man myself, I found that without resetting the switches, information was complete, but as I had been warned, flashing did occur. I liked it. It gave the exercises a dynamic quality that I felt might be sacrificed if I did as instructed and reset those switches. To each — with this choice — his own.

(MichTron, 576 S. Telegraph, Pontiac, MI 48053, 313-334-5700, \$34.95)

— Skip Maloney

Minute Manual For The Dot Matrix Printer — A Buyer's Guide

The *Minute Manual for the Dot Matrix Printer* is a buyer's and user's guide to the dot matrix printer (DMP). The book is easy to read, written in a breezy style and contains lots of general information as well as specific details on six popular "full feature" DMPs. Although I found a few typos and printing errors, the quality of print and diagrams is good and I found no significant errors (admittedly I am familiar with only one of the printers covered, the C.Itoh 8510). Since using a printer requires information about the computer and the software, the author is forced into discussions of idiosyncrasies of some popular computers such as the Apple //e. Where not relevant to Sanyo users, I shall attempt to ignore such material in this review.

The stated goal of this manual is to provide non-technical advice and information for the user who wants to buy and use a printer without programming. The assumed reader is inexperienced and not technically oriented yet the material is essentially technical in nature. This combination makes for a hard task; it requires knowledge, perspective and excellent writing skills. In many respects the author succeeds in these goals — in others he does not. For the novice a few sections seem to be a bit indigestible at first. Despite the non-technical orientation, the author pulls together much that will be of interest to the hobbyist and the somewhat technically oriented. Lists of current printer control codes, capabilities, and highly touted sales features are compiled in one place for the reader. For the user considering a change or an upgrade, the book provides a very useful compendium, and the buyer's guide goal is met. The technically naive will find this feature valuable against the sales barker of the computer retailer.

The book has seven chapters and a buyer's guide chart as Chapter Eight. The first two chapters introduce the reader to the DMP and its printing features and the cost of full-featured DMPs versus the less than full-featured printers. A very basic explanation of the dot matrix is given and the concept of matrix density and print quality is provided.

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Comparison of DMPs with other types of printers such as thermal and daisy wheel printers is made. Since the author is a supporter of the DMP against other printers, the DMP comes out as the better buy in his analysis. (Although I tend to agree with him for most cases, there are times when even the best full-featured DMP is not a substitute for a good daisy wheel, a true proportional printing word processor or the quiet of a laser jet printer.)

The meaning of Near Letter Quality printing (just now becoming available on many brands of printers in the price range of \$300 to \$600) is detailed, along with features such as printing modes, character width, special character sets and bidirectional and logic seeking capabilities. In Chapter Two, examples of most of the common printing features available are shown in enlargement figures, with a list of the printers which have the feature.

Chapter Three discusses the physical features and the costs of the printers. Costs include more than the printer, and the author reminds the reader that connecting equipment is not free. Sanyo users need not concern themselves with this extra expense beyond the connecting cable. Here too, he mentions the difference between tractor feeders and pin feeders, adjustable and non-adjustable pin feeders and the advantages and costs of each. (A short aside: My printer uses pin feeders; *InfoStar* seems to assume tractor feeders and as a result I lose a sheet of paper at each printing. Ah, the little annoyances of life!)

This chapter also includes a section on prices, and what the author terms the "Dot Matrix Printer Wars." These ongoing price and feature wars make price shopping a maddening activity — the price versus service dilemma gets

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to all of us. I no longer get bitter because a buddy buys the same equipment at 25 percent less — sometimes even from the same dealer in the same quarter! The author hints, and I advise, that all novice buyers should deal with a local reputable retailer; even though you may find a significant discount through a mail order dealer. The novice needs the help with software and set up that only a local can supply. More experienced buyers can get away with mail-order discount dealings, but they also should understand that good local dealers can support the local user in subtle ways that are very difficult for a distant dealer. (End of sermon!)

Chapter Three also has a discussion of printer speed that is one of the best I have seen. It is a non-technical explanation which includes numerical ratings. There is an amazing difference between the rated print speed and the practical print speed. Before you let the salesman dazzle you by saying how much faster his 160 cps (characters per second) brand X printer is than brand Y's rated at 120 cps, read this: One 160 cps brand comes out one third faster than the 120 cps brand, as it should; another does not come close!

Chapter Four delves into the (for Sanyo users) arcane issues of connecting the computer to printer and whether to buy a smart interface capable of adding fonts, graphics, buffer etc. Unless you unfortunately purchased a serial printer and have a Sanyo without a serial port, you can safely ignore this section. The only other part of this chapter of interest is a short section on printer switches and screen dump programs.


Chapters Five and Six instruct the reader on how to

use the printer. Since the author assumes that most readers want to use the printer without "programming" it, he develops a rating system for programs to aid the reader in deciding which programs do what. However, since he mentions few programs by name he is forced to be rather abstract. The rating system is as follows:

Number	Explanation
0	The program does not allow for printer use.
1	The program allows use of printer, but no printer control codes can be sent to the printer from within the program.
2	The program allows sending of printer control codes before printing, but not during the printing.
3	The program allows you to send control codes during printing, thus allowing for changes in type style and the like within a print run.
4	The program has the additional capability to allow modification, or is pre-modified, for the abilities of your individual printer.

At this point the author explains ASCII codes, communication between the printer and computer, control codes, etc. This is needed to explain how different programs have the user set up specific printer control codes. Next, he follows concepts concerning use of alternate character sets, creation and use of your own character sets and using

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BASIC programming to control the printer (with examples). The second "How To Use a Printer" section, Chapter Six, covers the basics of line feed, top of form, form feed, skip over perforation, etc.

Chapter Seven is a listing of the features of the six popular printers, with some discussion of advantages and disadvantages of each. This is a moderately complete chapter for the buyer, experienced or not. Chapter Eight is a wish list chart of features with check-off columns. While on the subject of wish lists I should inject a personal observation: Most people look for more features than they will eventually use. The thoughtful buyer or shopper will realize that what they need in a printer is a little less than what they want.

Now that the book is described, how to analyze it? The book is complete from the point of view of the novice, and probably unneeded for the experienced computer/printer user — although the latter may find it useful as a buyer's guide and feature reference.

These books, as the author admits, are always a bit out of date, but the general nature of his approach minimizes this problem. Some features and options will need to be updated, but the buyer will have little trouble doing so the first time he enters the sales room.

My biggest complaint with the book is the way the author jumps from topic to topic. For the experienced user this is no problem. I don't think the novice will be able to perceive the conceptual continuity between topics; for the novice buyer/user it may be terribly confusing. The first time buyer, and some others, should sit down with the book *after* reading it, in front of the computer printer

combinations of interest and test some of the software turning the abstractions of the book into reality; treat the book as a tutorial. A chart-like guide to each chapter, with a statement of what the chapter goal is, what the critical information is and how the author takes you through the woods would be welcome in the next edition.

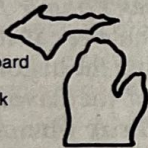
If you are already using a DMP, not to its full capability, and are frustrated in your inability to use its full capacity conveniently, as a result of incomplete information, *Minute Manual for the Dot Matrix Printer* is a good starting point to using your printer to greater capacity. You may also need better software (such as *WordStar* for example) and more specific information as in your printer's manual. Those of you who are upgrading to a full-featured DMP may find this book very useful, even if you have some technical competence.

For anyone considering their first printer, novice or experienced, I can recommend this book as a convenience, if not a necessity, since the money and time spent with it will save time later, and possibly money. If your printer is doing just what you want, this book is superfluous. And for many technically oriented and experienced users the book, although interesting, is really just another list of what you already know.

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— David N. Wexler

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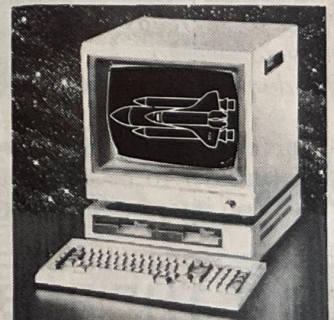
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Software Golden Oldies — Computer Software Classics That Are A Must

*"I found my thrill
On Blueberry Hill
On Blueberry Hill
Where I found you"*

Radio stations and record companies have been making millions for years with "Golden Oldies," those great hits of the past that somehow twang a special chord in our hearts and memories.

But songs, great as they are, are not the only "Golden Oldies" to be praised, re-enjoyed and honored by our memories.

Remember the very first time you played *PONG*? I do. 'Twas in a place called Shenanigans in Chicago's Rush Street area. So much did I like it that I bought a whole portable video game from Magnavox just to be able to play it on my own TV. Cost of that little adventure? \$200.

Speaking of Adventures, how about the original one? The travel through the Colossal Cave to fun, fantasy, pirates, dwarves and twisty little passages all alike?

The first time I played *The Original Adventure*, it took me a good hour just to figure out how to get in the cave — and a couple more to solve the mystery of getting past the snake. I remember the sheer exaltation when I did it — I even called a friend long distance to tell him!

Do these classics compare with The Coasters, Buddy Holly, Elvis and Chubby Checker (who Dick Biondi of WLS once said was "a fat taxi cab"?) You bet!

*"It's one for the money
Two for the show
Three to get ready
Now go, cat, go
But don't you step on my Blue Suede Shoes"*

A company named Software Country has put together what I consider to be a "must" list for everyone who has any sort of interest in — or nostalgia for — personal

computing. It is called *Software Golden Oldies Volume I* and features the original *PONG*, *Adventure*, *Eliza* and *Life*. Do these programs need explanation? Probably not.

Still in all, *PONG* is the original arcade game, and can be played in either black and white or color, one person or two. *Adventure* is the original version of the great Wil Crowther/Don Woods hit. *Eliza* is the original "artificial intelligence" program which resembles a psychiatric session. You type in comments and *Eliza* asks you questions. It isn't real, but it is a lot of fun. *Life* is that famous game — that isn't really a game at all — in which you set up individual cells on the screen and they either give birth to new ones or cause death of old ones, according to their proximity to one another. There are some classic starting patterns stored on the disk, as well as some interesting variations.

I know that when I got my first personal computer, I searched for months trying to find a version of *Adventure* that would run on it. I was addicted to the game. In its original version, *Adventure* was the classic "text" *Adventure* — and in whatever color the screen would handle. This version has been livened up with your commands in one color and the computer's responses in another. There is also a "Save Game" feature!

A real blast from the past!

*"Went to a dance
Lookin' for romance
Saw Barbara Ann
So I thought I'd take a chance"*

Here's the Barbara Ann of Software.

Software Golden Oldies Volume I comes with a 40-page perfect-bound book (I'd hate to call it a manual) that spends most of its space explaining the history of the four programs and bringing out some of the flavor of them — including Tracy Kidder's Pulitzer Prize winning "The Soul of a New Machine" essay on *Adventure*. The book itself is a joy to read, a "Book Of Love" to the greatest computer software classics ever.

Finally, recognizing that these "golden oldies" have been adapted for what they are, essentially, business machines, Software Country has added a nice little touch too often missing from software today — a touch of humor.

If your supervisor or the BIG BOSS walks in your office while you are playing, there's a "panic button," CONTROL-P, that will quickly erase your screen and put a "spreadsheet tutorial" display on your monitor for the boss to see how hard you're working. A perfect touch.

These are programs you *should* have. They are original uncut author endorsed versions of the classics which, as classics, will certainly live forever — or, at least, as Johnny Mathis once said, until "The Twelfth Of Never."

(Software Country, distributed by Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403, 415-572-ARTS, \$34.95, requires 256K with the Video RAM Board or an MBC-775)

— Lonnie Falk

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Prickly-Pear Datapack — A Truly Relational Database Program

With all this talk these days about relational database managers, it's difficult to find one which is reasonably priced and easy to use, as well as designed to run on the Sanyo MBC-550/555 series computers. *Prickly-Pear Datapack* is a program which is, in fact, a true relational database as well as meeting the other two criteria. The package, which was written by Ocelot Computer Services of Edmonton, Alberta, Canada, is published by Prickly Pear Software and hence, the name. Having seen a few other database managers, I felt at ease running it through its paces and decided to evaluate it by using it on a database which had been constructed using another database management program.

The finest feature of this package is the command language with its excellent help utility. The command parser appears to be well-written and will accept any unambiguous abbreviation for keywords in a command. The help utility is also well-done in that it prompts you with textual information on the specific command and then provides you with the information relative to the current record and database in use. The closest thing I have seen to this is *Condor* which uses a command language type structure, but sells for around \$600. *Condor* has several other features, however, which will be discussed later.

The program comes with a short but concise manual which includes a series of exercises that can be done on the sample database included on the disk. The program is entered simply by typing the name and entering commands which tell it what you want to do with your data and databases. As promised, this is a true relational database manager and a relationally complete set of operations is included in the command language.

The instruction set includes:

Database and Record Specification Commands — DATABASE (to select a database for use), TYPE (to select a particular record within the database), MAKE (to build a new database) and KILL (to destroy the contents of a database).

Record Select, Project and Join Commands — FIELDS (to specify the fields you want displayed, really a projection), LOOKUP (to specify your selection criteria) and JOIN (to join records with matching join field contents).

Report and Output Commands — OUTPUT (to print the records you have selected to the screen or printer), BREAKFIELDS (to specify fields on which you want the program to break the output into sections), SORTFIELDS (to specify the fields on which you want the output sorted) and PAGEHEADING (to specify a heading on your output).

Database Maintenance Commands — EDIT (to change existing records), NONVALID (to specify conditions which records must meet in order to be added to the database), READ (to read fixed length ASCII records from other files, created by other programs into the database) and

UPDATE (to update the contents of fields which are calculated from the values in other fields or constants using definitions which you provide).

Utility Commands — CHANGE (to swap diskettes or drives), GENERAL (to advise you of your current status), HELP (a really nice help utility), INPUT (to accept command input from a disk file built with a text editor), JOT (to make notes to yourself in the above mentioned command files), QUIT (to exit to DOS), WRITE (to write the contents of the selected records to an output file in contiguous ASCII format), and VARIABLE (to define macros to facilitate repetitive operations).

After thumbing through the manual, I decided to try a few of the exercises and found that the program performed as promised. In no time at all I was running through the exercises. That being accomplished, I decided to try reading the contents of a sequential file that I had created with another database program. Since the file was a fixed record length sequential ASCII file, I was able to build a database to receive the file in approximately 10 or 15 minutes, using the MAKE command. Then, using the READ command, I was able to read the contents of my file into the newly created database, one record at a time.

Once I had the records in, I tried out the other data manipulation commands and found that the program functioned very well. Next, I tried to emulate the report format which I had created with the other database program. At this point, I ran into one of the limitations of the program — limited report formatting capability. Try as I might, I could not duplicate the format which contained listings of the records in a two-line format on

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a page with a blank line between each record. I couldn't tell if this was within the program's capability or not and it was not documented. I was also a little disappointed in the lack of screen formatting capability because you cannot change the default format. Next, I tried to save the data set so that I could use it later and found that this was not possible, another limitation.

The next step in my evaluation was to add fields to one of the records to see if it could be done without a data loss, but there is no command to add fields to the record and so I couldn't do this either. Finally, I wanted to edit the contents of some of the fields in the records which had been joined, and I found that this was not possible (nor is adding or reading of joined records possible). All of these things are possible with some of the more powerful (and more expensive) database managers such as *dBASE II* and *Condor* but neither of those is terribly easy to learn. I liked this program's command language and with little effort, I think it could be developed into something as powerful as any of the others.

There is one other detail about the program which bothered me and that was the lack of a key which could be used to interrupt the current activity and return to the command level. Several times, while running the program, I wanted to discontinue what I had started and go back and try something else. I tried several commonly used combinations but none of them seemed to work. This was not bad when I had only 13 records to look at, but was inconvenient when I was forced to work my way through 200 records during my use of the READ command on my old data file. I ran through the customizing utility

provided with the program but it was no help. If there is a key which works on the IBM PC, then the customizing utility should allow the assignment of an alternate for the Sanyo. If there isn't such a key, then one should be added to the program.

Some other features which I liked about the program include the capability to sum, count, average and display maximum and minimum values for numeric fields — a very nice feature for report purposes. The macro command, which I also liked, allows you to assign entire command strings to a single keystroke so that executing even a very lengthy lookup command is as simple as entering a one keystroke command. The ability to read input from a diskfile is also a nice touch. Using this feature, you can perform lengthy report procedures simply by directing the program to take its input from a specific diskfile. The command language is not as powerful as that of *dBASE* or *Condor* which allow variable assignment — iteration and conditionals — but it still allows you to do some lengthy or repetitive things very easily. All of these features considered together make it a nice package for the average user. At \$150, it's one I would consider purchasing for my own library despite the above limitations.

(Prickly-Pear Software, 2640 N. Conestoga Avenue,
Tucson, AZ 85749, 602-749-2468, \$150)

— Bill Chang

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Oki Font-Do — Fonts For The Fontless

I bought an Okidata printer because I had heard they were more reliable than some of the other brands, and I haven't been disappointed in my decision. I do a fair amount of word processing as well as data processing and I like to do screen dumps from some of my graphics stuff.

There is, however, in the Okidata 92A manual, a section on All Points Addressable (APA) graphics which I promised myself I would "bone up" on so that I could create a Greek letter font for use with my scientific work. Anyway, a year or so had gone by and I still hadn't done it, when along comes *Oki Font-Do* for review. The program was just what I was looking for!

Included in the \$9.95 package are several BASIC programs which are designed to load one of four different fonts (Block, Futuristic, Italic and Script) into the Oki's Down Loadable Character Generator (DLCG). Once the font is loaded, all that is required is for you to set up your BASIC or word processing program to send the control characters needed to turn on the DLCG character set and Presto!, you're printing in script or italics with your Oki.

The *Menu* program furnished on the disk lets you select which of the four provided fonts (or any of the six you can define yourself) you want to load into the DLCG. After that is done, you are taken to *FUNCTION.BAS* which presents a menu that can send any of the control codes which affect character width, line spacing or print mode to the printer. The result of all of this is the ability to print in any of the new font combinations in 8.5, 10, 12 or 17 characters per inch as well as varying them even further by using the emphasized or enhanced print modes or both — all told, an impressive number of combinations.

Also included in the package is a shell program which gives you the skeleton of a program designed to let you design your own fonts. You need to study the Okidata manual to understand this part, but with a few minutes of study I was able to load the first five or six characters of the Greek alphabet into the DLCG and print them. Not bad at all!

The program is furnished with several pages of well-written documentation which explains the function of each

of the programs furnished on the disk, as well as the concepts you need to understand to best utilize the program.

There are three other programs on the disk, *DEMO.BAS*, *WGRAPH.BAS* and *LGRAPH.BAS*. *DEMO* gives you a graphics picture on your screen which can also be *LPRINTed* to your printer. *WGRAPH* is a program which loads the block and line graphics characters into the DLCG to print them in word processing programs which are unable to translate graphics characters from the keyboard's graphics mode. Finally, *LGRAPH* loads line and graphics characters which can then be used in BASIC or other programming languages (characters with ASCII values above 176 are converted by subtracting 128 so the Oki's DLCG can be used).

The *DEMO* program, as well as a section of the documentation, shows you how you can create interesting mixes of characters and graphics using the graphics DLCG characters. In addition, if you vary the line spacing here you can really get some nice looking graphics.

The program's documentation states that it is compatible with any PC/MS-DOS computer, making it an even better value. This program is well-written and useful as well as very reasonably priced. If you own an Okidata 92/93 printer, I would highly recommend this as an addition to your library. The number of combinations of text possible with the fonts provided makes it well worth the price. If you master the art of character generation, the possibilities are almost limitless.

(Wolfsangel Enterprises, Maple Avenue, Bldg. Y3-3,
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— Bill Chang

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WordPerfect 4.0 — A New Standard In Word Processing

WordPerfect 4.0 is a word processor whose name comes close to a true description. Even the version number — 4.0 — echoes the grade that Satellite Software International deserves for producing such a sparkling product.

What's so good about it? Almost everything. It's quick, simple, easy to learn and easy to use. It re-forms paragraphs automatically, underlines and boldfaces on screen, automatically adjusts for footnotes, endnotes, "widows" and "orphans" (those pesky single words or lines which are left hanging at the bottom or top of a page). It generates outlines, indexes and tables of contents. It edits two documents at once, allowing easy merger of charts and text. It does four-function math for business applications and supports every Sanyo keyboard, including direct entry from the graphics keyboard for special effects. And it keeps getting better: The program is updated every few months in response to customer suggestions.

Basic word processing with *WordPerfect 4.0* is simplicity itself. The cursor control keys position the cursor anywhere on the line, screen, page or document without special and notoriously forgettable control codes. The fully-implemented function keys give easy access to all the program's menu-driven features.

The sole difference between *WordPerfect* on a Sanyo and *WordPerfect* on an IBM lies in the function keys. Because Sanyo neglected to completely mimic IBM's 10 function keys, running *WordPerfect* means using the IBM keyboard translation table in the Sanyo documentation. For example, CONTROL-8 on the IBM is the print format command, and on the Sanyo it is CONTROL ',' (comma) — a minor inconvenience.

The *WordPerfect* help screen is also a marvel, listing functions either by general category or detailing instructions for a particular function by pressing "help" (PF3) followed by the appropriate key.

WordPerfect's sophisticated features are as simple and straightforward to use as those for basic word processing. Take, for example, embedded control codes. With the touch of a button, the program reveals embedded control codes

for direct editing of format or printer control commands. When the document is finished, *WordPerfect* prints it from the screen, not from the last copy written to disk, although disk files may also be printed or even spooled to print several files in sequence.

The program comes on four disks, one each for the IBM and compatible versions, one with a spelling checker and the other with utilities. The compatible program runs without modification on the Sanyo with two drives and 256K of RAM; the IBM version runs nicely with the Sanyo Video RAM Board.

One utility, *Convert*, not only changes all those old *WordStar* files to *WordPerfect* files, but changes *WordPerfect* files to *WordStar*, letting you send text to everyone still riding the dinosaur.

WordPerfect's documentation and tutorials are excellent (they promised to fix the sole error I found), as is customer support. For example, if you can't find your printer on the long list of factory installed printers and are too lazy to install it yourself, SSI will write you a print driver. (Try asking MicroPro to write you a print driver for nothing.)

Special features? The program is loaded with them.

The spelling checker lists a half dozen options, letting you check a word, a page, or the entire document, either comparing words exactly or phonetically using standard wildcard characters (* and ?). You can also use the spelling checker just to look up a word. Maintaining the dictionary is also a simple, menu-driven operation. Indeed, even the merge codes for mass mailings are menu-driven, simple and mnemonic: Fields are indicated by ^F, records by ^R, end-of-record by ^E, etc.

If pushing a few buttons to access features proves tiresome, *WordPerfect* supports user-defined keyboard redefinition and macros (the program's equivalent to a batch file) to remember frequently used or complicated sequences of keystrokes.

Do you have a use for double-column printing like a newspaper? *WordPerfect* does it.

The list of features goes on. My favorite is the outline generator, allowing the easy collection of ideas before writing. Sufficient to say, *WordPerfect* makes a variety of heavy-duty word processing tasks as painless as possible and, at the same time, stays out of the user's way.

Complaints? More like suggestions. On screen, during basic text entry, *WordPerfect* shows only the document number one or two, the page, line and cursor position numbers. Adding an option to show the file name on the status line might be helpful. The documentation, with its clearly written tutorials and reference section, is excellent. But a cross-referenced page, referring the reader to the appropriate reference section listing for each embedded code, would be useful.

Overall, *WordPerfect* is an impressive program, bound I hope, to replace *WordStar* as the industry standard.

— Stephen Robinett

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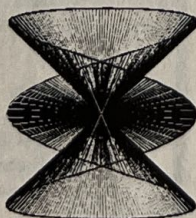
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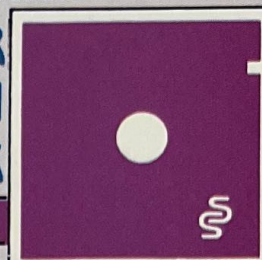


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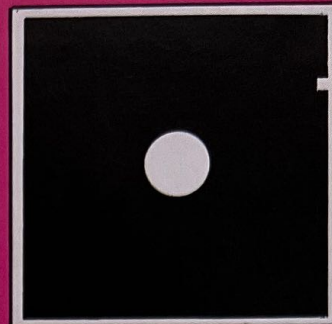
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SOFT TALK



WORKLOG is an automatic logging program which provides a convenient and comprehensive method for maintaining a complete and up-to-date record of your computer usage.

WorkLog consists of two programs. The first of these is *Log*, which keeps track of multiple users, different types of jobs, projects and various machines. It will also monitor actual computer usage by counting keystrokes, disk activity, etc. The second program is *WLREPORT* which performs two functions. First, it allows you to create reports of machine use. You can develop summary reports and special reports with subtotals and subsubtotals.

Reports generated by *WLREPORT* can be printed or can be used by word processors, spreadsheets, database managers and other programs.

WorkLog requires a Video RAM Board or an MBC-775 and is currently available for \$59.95 from WyssWare, 5207 Ravenna Ave. NE, Seattle, WA 98105; (206)526-0711.

BOTTOMLINE CAPITALIST is a business management simulation which

helps increase business planning, finance, marketing and management skills. It allows up to four players and prepares them with data and a "game plan" for running their business.

This interactive simulation is complete with an overview, examples, a set of menus, an in-depth tutorial, capitalist applications and a summary.

BottomlineCAPITALIST was designed to challenge the imagination of the student, entrepreneur, junior executive and seasoned business executive. Its major purpose is educational in nature, but it takes a real-life approach by injecting the essential ingredient of "challenge."

BottomlineCAPITALIST requires a Video RAM Board or an MBC-775 and is currently available for \$80 (\$5 S/H) from Venture Software, 16200 Ventura Blvd., Encino, CA 91436; (818) 986-4110.

COFORTH 83 version 3.0 was designed to be a programmable, interactive, real-time multitasking language to be used for control of analog and digital music synthesizers.

The *CoForth* programming environment is similar to that of Turbo PASCAL, in that it provides an integrated compiler/editor. Also in common with PASCAL is FORTH's blocking of code into named procedures and its adherence to the principles of structured programming. Each of these procedures may be called individually from the interpreter by name, variables may be examined and modules of code tested without writing special testing programs. This leads to a rapid debugging cycle and increased programmer productivity.

Although it shares its interactivity with BASIC, FORTH is semi-compiled — an approach which can yield code that runs up to 30 times faster than BASIC and which is generally more compact than its compiled equivalent.

CoForth 83 is currently available from Bluewater, 2537 Colfax Avenue So., Minneapolis, MN 55405; (612) 377-7369.

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educational tool which graphically simulates a solar hot-water/space heating system in action. It gives you control of 20 parameters to tailor the simulation to fit your own needs.

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The manual is written in a textbook format which includes a complete tutorial and glossary. *Solarsim* is designed for students in energy related fields, for solar energy consultants or for frustrated home owners looking for a way to save money by utilizing solar energy.

Solarsim requires 192K for DOS 2.11 users and 128K for all others. This program is currently available for \$49.95 from MichTron, 576 South Telegraph, Pontiac, MI 48053; (313) 334-5700.

* * *

PHRASESTAR is a program designed to simplify learning word processing and producing documents. This program allows you freedom in choosing the keys of your choice to enter commands and key text. For beginners, there is a simple set of commands called "Beginner Phrases."

For quick productivity, there is a "First Set of Dedicated Phrases" which automates and creates additional features for *WordStar*, including a number

of general-purpose document formats. *PhraseStar* also comes with a full keyboard overlay (the standard IBM PC layout) and optional color stickers.

PhraseStar is currently available from Adept Computer Solutions, Inc., 5900 Sepulveda Blvd., Suite 550, Van Nuys, CA 91411; (818) 501-4798. Introductory price, \$49.95, \$5 S/H.

* * *

CARD-SHARK is a program which consists of four games: *Draw Poker*, *Head-to-Head Poker*, *Casino Poker* and *Blackjack*.

This program may be used with either a monochrome or an RGB monitor. In addition to the four games, the diskette contains an AUTOEXEC batch file which will boot up the computer and run a program called *Start*. This program will invoke the program menu from which the player selects the desired game.

The cards in all the games are generated with full-symbol representation and in proportion to those commonly sold. In addition, *Head-to-Head Poker* contains a computer algorithm for making playing decisions against the player.

Card-Shark is currently available for \$29.95 from Viessman and Kohn, Route 2, Box 45, Vienna, MO 65582; (314) 422-3385.

* * *

SANYOPOLY is a computer version of the board game *Monopoly*. This program allows two players and is menu driven so all necessary user responses are prompted on the screen. Single-

Correction

Chuck Kincade, author of *Reclaiming Those Lost Files* (August '85, Page 39), has informed us that Line 1850 of his program should be deleted.

```
1850 IF IREC=NREC GOTO 1990
```

This line was intended to reduce the number of file writes by not rewriting a cluster if its position in the file is unchanged. This test also causes the program to skip the procedure that replaces "End-of-File" bytes with nulls.

This can cause problems if the user is recovering either multiple files or a *WordStar* file, in which the old .BAK file was deleted due to insufficient disk space. In the latter case, the end of the *WordStar* file precedes its beginning.

When these conditions exist, the data following the End-of-File would not be available for editing, since the editor would terminate loading the file at this point. By removing this line, all End-of-File bytes are replaced in all reclaimed clusters and the entire file would be available to the editor.

soft sector



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letter commands help move play quickly and easily.

The computer chooses who goes first and proceeds to "roll" the dice. The player stops the dice by hitting any key. The playing pieces are either a "Rocket" or an "Automobile." There is a master menu which is presented for each player's turn and includes a number of options. These options are explained in detail in the documentation.

Sanyopoly requires 256K and is currently available for \$29.95 (\$3 S/H) from Michigan Software, 43345 Grand River, Novi, MI 48050; (313) 348-4477.

* * *

PRINTER SET-UP UTILITY is a RAM resident program which allows you to install custom features of your printer. The program *SETPRN* is menu driven and can be loaded from DOS, BASIC or any of the MicroPro Software bundled with your Sanyo. It will also run with most other software.

Printer Set-Up Utility version 1.0 is designed for the Epson RX-80 printer and compatibles or the Star Micronics Gemini 10X and compatibles. Each version of this program is written for a specific printer.

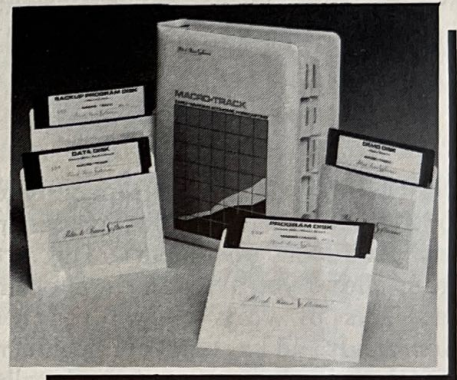
Printer Set-Up Utility is currently available for \$35 from J & M Software, 400 Sawyer Rd., Lansing, MI 48910; (517) 393-8660.

* * *

MACRO*TRACK is a forecasting program which selects possible techniques for future problem solving in business, economic and financial situations.

The authors of this program have devised a non-econometric technique for decomposing a series into its trend and cycle components. It is designed to determine where a series is positioned in its cycle at any given time. It uses its cyclical analysis technique to provide long-range forecasts of any series' possible turning point. This technical approach was chosen not only because it provides more accurate forecasts, but also because it is mathematically objective and can be self-generating and not dependent on external assumptions or input.

*Macro*Track* requires a Video RAM Board or an MBC-775 and is currently available for \$299.95 from Black River Software, 118 N. Marshall, Suite 150, Winston-Salem, NC 27101; (919) 924-6389.



The products and services listed above are currently available for Sanyo personal computers and many will be reviewed in future issues of *SOFT SECTOR*.

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BUSINESS SECTOR

CHARLOTTE & BRIAN STONE
Soft Sector Contributing Editors

Q. *I have solved the continuous underlining problem using an Epson RX-80 and WordStar by writing a couple of supplemental programs for my WordStar disk. They are as follows:*

UNDERLIN.BAS	UNDEROFF.BAS
10 LPRINT CHR\$(27)~-1~	10 LPRINT CHR\$(27)~-0~
20 SYSTEM	20 SYSTEM
UNDERLIN.BAT	UNDEROFF.BAT
BASIC "UNDERLIN.BAS"	BASIC "UNDEROFF.BAS"

These programs put me into continuous underline mode at any time. They can be programmed into the specialty keys, but I am using those for emphasized mode and wide type.

I have done the same thing for subscript and superscript.

SUBSCRIPT.BAS	SUPERSCR.BAS
1 LPRINT CHR\$(27)~S1~	1 LPRINT CHR\$(27)~S0~
2 SYSTEM	2 SYSTEM

SCRPTOFF.BAS

10 LPRINT CHR\$(27)~T~
20 SYSTEM

I have tried to install these commands into my WordStar program so that I can use the ^PV and ^PT commands within the body of the text and I have not been successful. I would greatly appreciate your assistance in getting these options installed.

Ken Kessler
Kansas City, MO

A. You will not be able to install new code for the function keys ^PV and ^PT using the *Install* program, but you could install the desired functions in place of the 'I' Ribbon Select and 'M' Phantom Character. Each of these functions allows you to have a turn-on code as well

(Charlotte A. Stone, office manager for the Detroit office of the Shaw/Walker Co., has been using a Sanyo computer in her daily work routine since October of 1983. Brian M. Stone has been using a variety of Sanyo computers since May of 1983. Charlotte and her husband, Brian, have been involved with computers since July of 1978 and presently own and use five computer systems on a daily basis, three of which are Sanyos.)

as a turn-off code. Use the *Install* program and do the following:

Location and Control	Code To Insert	Result
^PI Ribbon Select	1Bh 0Fh	Subscript ON
^PI Ribbon Select	1Bh 54h	Subscript OFF
^PM Phantom Character	1Bh 0Eh	Superscript ON
^PM Phantom Character	1Bh 54h	Superscript OFF

WordStar doesn't care what codes you send to the printer in place of what the program was originally set up to do. Now every time that you want subscript use ^PI2^PI and the 2 will be printed in one-half size characters on the lower half of the line, ^PM2^PM would give you a superscripted 2.

Q. *I am using an Okidata 182 I/O Parallel printer on my Sanyo 555-2. This letter is printed using WordStar with the left margin set at five and the right margin set at 75. As you can see, the lines seem to be wrapping around which also causes pages to be printed over.*

I attempted to install the printer but found (of course) that my printer is not listed. I tried both "standard printer" and "IBM Parallel printer" but the results were the same. Do you have any suggestions for me as to how I should install this printer?

Perry E. Meltzer
Monticello, NY

A. From the looks of your letter, it seems that you are setting the left margin of your letter on screen rather than with a dot command. To get a 75-character line, you should set up your file as follows:

- 1) Use ^OR to set the right margin to 75, left margin at zero.
- 2) Use the dot command .PO5 to set the page offset to five spaces.

This will print a 75-column line of text starting at the fifth column on your paper with five spaces on the right margin. It is not necessary to adjust the on-screen margin at all unless you want to type large amounts of indented text.

The printer is best installed as a standard printer.

Q. *I am having difficulty with MailMerge and perhaps you can help. It works well in every aspect except it skips to every second file record all through the file and I must delete the first record or move it in order to get the second set of records.*

For example, using MailMerge, a file of 10 records will print out only the odd numbered records. To get the even

numbered records, I must delete the first record or move it to the end so that the second record becomes the first.

Do you have any ideas?

M. Eugene Mockabee
Kalispell, MT

A. There is not enough information in your letter to give me an idea of what you are doing wrong with *MailMerge* and your datafile to print all entries. I just created a small file. See the following:

Sample Letter

.PL10
.MT0
.MB0
.DF MMTEST
.RV NAME,ADDRESS,CITY
July 7, 1985
&NAME&
&ADDRESS&
&CITY&
best regards
.PA

Sample Data File — "MMTEST"

Brian M. Stone, P.O. Box 385, Prospect, KY 40059
Charlotte A. Stone, P.O. Box 385, Prospect KY 40059
XXXXX X. XXXXX, 328 W. Rose City Rd., Rose City,
XX 33333
YYYYY Y. YYYYY, 328 W. Rose City Rd., Rose City,
XX 44444

From the example above I will explain all of the commands for you to compare it with what you are doing.

.PL10	This example sets the page length to 10 lines.
.MT0	This example sets the top margin to zero.
.MB0	This example sets the bottom margin to zero.
.DF	Defines the file to read, i.e., MMTEST.
.RV	Defines the variables from the data file.
.PA	Forces a page break — you <i>must</i> do this.

I do not know what else to tell you at this point because the above examples work exactly as they should. If this does not help please send a disk with your letter (*MailMerge*

file) and the data file and we will try to find out what is wrong.

Remember, you cannot use a comma (,) between city and state unless you do it this way — "Kalispell, Montana 59903-0955," (note the quotation marks). If you do, it will divide the field into two parts and mess up your results.

Q. First, in using *CalcStar*, I find that I am only able to load a page and a half of information into the machine before the memory gets low and locks. Saving it to disk and hitting RETURN still does not do the trick. It has been suggested that the RAM needs the extra 128K added memory. If this is so, how many pages would I be able to load before running out of memory?

Second, A number of companies offer added memory, and the prices vary. Is there a great deal of difference in the quality? Also, are they hard to install?

Paul D. Shadle
Elmer, NJ

A. *CalcStar* is a memory-dependent program and as such, adding the extra memory will increase the size of a spreadsheet. There is no way to tell you how much larger your spreadsheet can be by adding the memory because it will depend on your use of blank lines between rows, and the size of the columns used. If you use as little extra space as possible, you will be able to increase the size of your spreadsheet.

Try not to insert blank rows to make it look good because "empty but allocated" means that space is gone but unused. Also, do not use Row 32 for calculations because there is a bug in *CalcStar* that will not calculate in Row 32.

The installation of memory in the computer is very easy and the instructions are in the user's manual that came with it. The most common problem is static electricity and bent pins from being inserted incorrectly. You probably have someone "in the parish" who would be more than willing to assist. The cost of the memory now is in the under \$20 range and would be a worthwhile investment. We would suggest that you purchase 150ns to 200ns 64K RAM chips at the best possible price that you can find from a dealer who has been advertising regularly in **SOFT SECTOR**.

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Automating Your Spider Graphics

By

Dave and Patti Neuendorf

We had a request for a method to automatically merge and run the "Spider" routines for our *Spider Graphics* program (June '85, Page 52). It seemed like a good idea, so we looked into it.

Simply using the MERGE command within the program would not work, because it forced a return to BASIC. After thumbing through the Sanyo BASIC manual looking for something else, we noticed the CHAIN command. This powerful command allows you to, in one step, delete any old lines, merge in new ones and run the program automatically. It was everything we needed.

The listing shows the modifications of the original *Spider Graphics* program necessary to incorporate a menu of Spider routines to be chosen and run under program control. It is presented with our own demonstrations. It takes only a few simple modifications to add your own Spider routines to the menu.

(Dave Neuendorf holds a B.S. in chemistry, an M.S. in metallurgy, and is currently employed as an extractive metallurgist. He programs in 6502 and 8086 assembler, BASIC and FORTH. Dave and his wife Patti, a computer analyst, have established a software development firm, NeuSystems. The author may be contacted at 281 Continental Dr., Pottstown, PA 19464, 215-327-2970.)

Line 290 is changed from GOTO 2000 to GOTO 1800, where the menu routine is written. Lines 1800 through 1960 are new. MAXMENU in Line 1810 should be set to the total number of Spider routines in the menu. DEMO\$(1) through DEMO\$(MAXMENU) must be set to the names of the routines as they appear on the disk. The menu itself (lines 1860 to 1890) may contain any description of the Spider routines, being sure that the numbers to the left correspond to their position in the DEMO\$ array, and is easily expandable. That's it! The CHAIN command in Line 1960 automatically deletes any existing Spider routine in lines 2000 to 4000, merges in the specified routine at Line 2000 and runs the program.

This should make our Spider a little friendlier. We hope you're enjoying his antics.



The listing: SPIDERM.BAS

```
290 GOTO 1800
1800 REM *** Automatically MERGE and RUN the SPIDER subroutines ***
1810 MAXDEMO=4:DEMO$(1)="webs":DEMO$(2)="flowers":DEMO$(3)="polygons":DEMO$(4)="
stars"
1850 CLS:PRINT:PRINT,"CHOOSE SPIDER ROUTINE TO RUN":PRINT
1860 PRINT,"1: SPIDER WEBS"
1870 PRINT,"2: FLOWERS"
1880 PRINT,"3: SPIRALING POLYGONS"
1890 PRINT,"4: RANDOM STARS"
1950 LOCATE 24,10:INPUT (1);"ENTER NUMBER";NDEMO:IF NDEMO < 1 OR NDEMO > MAXDEMO
THEN 1950
1960 CHAIN MERGE DEMO$(NDEMO),2000,ALL,DELETE 2000-4000
```





... where one graphics analysis program is worth a thousand numerical representations



By Michael Izzi

It is sometimes true that "A picture is worth a thousand words" when it comes to analyzing numerical data. Many times the quantity of data and the many avenues of comparison make it very difficult to extract meaningful information. That's why many businessmen and technologists are turning to computers to help them visualize what's happening and to present information in a more useful way. This program will provide a start



(Michael Izzi has a master's degree in mechanical engineering and has held engineering management positions on several aircraft and spacecraft programs for a major aerospace company.)

in that direction for anyone interested in graphically analyzing data.

The Logo

The code for the program is relatively simple. I wanted the logo to alternately flash a line and bar graph in the background. This was done in lines 140 through 190 by nesting two timed loops (one for the line graph and the other for the bar graph), within another counting loop. Each graph is erased after each timed loop by essentially replotting them with no color. Since this effect is in the background, the erasures cause loss of color through the foreground screen display of the program name which had to be repeated after the erasure to fill it back in.

Chart Titles

The first thing the program does is to ask you to title the chart and name

the X- and Y-Axes. In most instances, the title should relate to the general subject matter to be plotted, and the axis name is a general description of the parameters to be plotted along that axis. These titles must be input since they are printed using the SYMBOL command.

Data Entry

The interactive queries are straightforward. The program enables you to make two plots on the same chart for comparative purposes. When the program asks for the number of data points in a data set, however, it wants the number of points in one plot, not the total for both. This sets the dimension for each data set array.

The magnitude of any data point should not exceed 10,000 or the program will ask you to start all over again. Any value greater than that should be represented in thousands, millions, etc. This may be noted in your labeling of the Y-axis. The Y-axis will automatically be scaled according to your data so that the plot can easily be read. This is done by testing the data in lines 680 through 780 and assigning a maximum scale value from five to 10,000 in five major divisions.

Graph Labeling

After entering the data, you will be given a choice to plot the data either as a bar graph or a line graph. Each bar or breakpoint in the graph may be labeled along the X-axis for a maximum of twelve data points. This will allow you to identify data by year, month, time, etc.

The reason for the limitation on the number of labels is obvious. If you have more than twelve points or bars per graph there will be little room for labeling due to crowding, especially if you have a second plot on the same chart. In the case of a bar chart showing two sets of data, each bar is labeled and is shown in a different color. The labels of one data set are offset from the other and both match the color of the bars to help alleviate confusion. In this case, the program will also ask you to associate each data set with its color by naming the color key. For line graphs, only the breakpoints or inflections in the curve are labeled, since they are plotted one above the other as opposed to side-by-side for the bar graph. Again, each plot is a different color.

A program note also advises you to limit the number of characters per label

to four. However, when you're familiar with the program, you may vary the size of the label depending on the number of data points. You may elect not to label some or all of the data depending on your needs by simply hitting RETURN.

Editing, Saving And Printing A File

In its present form, the program cannot edit a plot or graph once it has been created. Graphic screen dumps such as *Freeze Frame*, however, may be used to make hard copy or save the

plot to disk if you wish. I am presently working on a version which will access my *DataStar* files and enable me to plot any records I have stored. This can be quite useful for analyzing income tax, salary, expenses and other records. These are improvements which can be added by the reader if so desired, or possibly be the subject for a future article.

When the chart is drawn and completed, the screen will be free of any ready prompt to allow for a clean copy to printer if desired. The prompt will

reappear when any key is struck and you will be asked if you want to reenter data for another plot.

Colors

One final point: This program was written using a monochrome monitor. Colors may be varied by the reader as desired. Of course the use of color or the various shades of a monochrome monitor to differentiate between two sets of data on the same graph will be lost when it is printed, unless you can print in color.

The listing: DATAPLOT.BAS

```

10 ***** DATAPLOT ***** By M. Izzi 3-12-85
20 CLS
30 WINDOW(0,0)-(639,459):VIEW(0,0)-(639,199)
40 LINE (10,0)-(630,450),3,B
50 LINE (18,10)-(622,400),3,B
60 PAINT (15,5),2,3
70 LINE (84,80)-(84,330),3
80 LINE (84,330)-(550,330),3
90 SYMBOL (140,180),"DATAPLOT",6,5,3
100 SYMBOL (380,250),"BY M.IZZI",2,1,4
110 SYMBOL (50,250),"Y-AXIS",2,2,2,3
120 SYMBOL (250,350),"X-AXIS",2,1,2
130 LOCATE 24,22:COLOR 3:PRINT "A BAR or LINE Graph Plotting Program":COLOR 2
140 FOR N=1 TO 3:FOR T=1 TO 2
150 LINE(100,300)-(200,150),2:LINE -(300,200),2:LINE -(400,50),2:LINE -(500,100),
,2:NEXT T
160 LINE(100,300)-(200,150),0:LINE -(300,200),0:LINE -(400,50),0:LINE -(500,100),
,0:SYMBOL (140,180),"DATAPLOT",6,5,3
170 FOR T=1 TO 2
180 LINE(125,100)-(225,327),2,B:LINE(275,60)-(375,327),2,B:LINE(425,150)-(525,32
7),2,B:NEXT T
190 LINE(125,100)-(225,327),0,B:LINE(275,60)-(375,327),0,B:LINE(425,150)-(525,32
7),0,B:NEXT N
200 CLS
210 PRINT "This program will plot a numerical data set as either a bar chart or
line graph.It also provides an option to plot a second data set on the sam
e chart for comparative purposes. Each bar or break in the line graph may be
labeled up"
220 PRINT "to a maximum of twelve(12) data points. Data sets with more than twel
ve points may be plotted without labels."
230 PRINT "A graphics screen dump may be used in conjunction with this program i
f a chart is to be hard copied or saved to disk.":FOR T=1 TO 500:NEXT T:GOTO 2
60
240 ***** AXIS NAMES *****
250 CLS:ERASE B,C,D:IF N<13 THEN ERASE L$,L2$
260 PRINT :PRINT
270 PRINT "Chart Title":INPUT C$
280 PRINT "Name X-Axis":INPUT X$
290 PRINT "Name Y-Axis":INPUT Y$
300 ***** NO. OF DATA *****
310 PRINT "Input No. of data points in data set to be plotted":INPUT N
320 ***** DATA *****
330 DIM B(N):DIM C(N):G=1

```



```

340 PRINT "Input data one at a time (If >100000, input in thsds or millions)"
350 FOR I=1 TO N
360 PRINT "Next ";
370 INPUT C(I):IF C(I)>100000 GOTO 1460
380 NEXT I
390 PRINT "Do you want a 2nd graph shown superimposed?(Y,N)":INPUT A$
400 IF A$="N" GOTO 460
410 PRINT "Input data for 2nd graph (If >100000, input in thsds or millions)"
420 FOR I=1 TO N
430 PRINT "Next ";
440 INPUT B(I):IF B(I)>100000 GOTO 1460
450 NEXT I
460 PRINT "Do you want LINE plot or BAR graph?(L,B)":INPUT Z$
470 '***** DATA LABELS *****
480 IF N>12 GOTO 630
490 DIM L$(12),L2$(12)
500 PRINT "Input first data set X-Axis labels one at a time, four (4) char max"
510 FOR I=1 TO N
520 PRINT "Next ";
530 INPUT L$(I)
540 NEXT I
550 IF A$="N" GOTO 680
560 IF Z$="L" GOTO 650
570 PRINT "Input second data set X-Axis labels one at a time, four (4) char max"
580 FOR I=1 TO N
590 PRINT "Next";
600 INPUT L2$(I)
610 NEXT I
620 GOTO 650
630 PRINT "No data labels allowed for X-Axis when data count exceeds twelve (12)
"
640 IF A$="N" GOTO 680
650 PRINT :PRINT "Input name for 1st data set color key (four char max)":INPUT L
3$
660 PRINT "Input name for 2nd data set color key (four char max)":INPUT L4$
670 '***** SCALE FACTOR *****
680 FOR I=1 TO N
690 IF B(I)<100001 AND C(I)<100001 THEN F=20000
700 IF B(I)<50001 AND C(I)<50001 THEN F=10000
710 IF B(I)<10001 AND C(I)<10001 THEN F=2000
720 IF B(I)<5001 AND C(I)<5001 THEN F=1000
730 IF B(I)<1001 AND C(I)<1001 THEN F=200
740 IF B(I)<51 AND C(I)<51 THEN F=100
750 IF B(I)<10.1 AND C(I)<10.1 THEN F=20
760 IF B(I)<5.1 AND C(I)<5.1 THEN F=1
770 IF F>G THEN G=F
780 NEXT I
790 IF N>10 THEN DIM D(N):D(N)=544 ELSE DIM D(10)
800 D(1)=544:D(2)=544:D(3)=540:D(4)=544:D(5)=540:D(6)=552:D(7)=532:D(8)=544:D(9)
=540:D(10)=540
810 '***** DRAW AXIS *****
820 CLS
830 LINE (84,90)-(84,364),3
840 LINE (84,360)-(630,360),3
850 FOR I=1 TO 5
860 LINE (82,360-I*54)-(86,360-I*54),3
870 LINE -(630,360-I*54),1
880 NEXT I
890 FOR I=1 TO 2*N

```



```

9000 XA=85+(D(N)*I/(2*N))-(D(N)/(4*N))
9100 LINE (XA,90)-(XA,364),1
9200 NEXT I
9300 '***** Y-AXIS SCALE *****
9400 FOR I=0 TO 5
9500 LOCATE 20-I*3,6:PRINT USING "#####";I*G;
9600 NEXT I
9700 '***** PLOT BARS & LABEL *****
9800 FOR I=1 TO N
9900 IF N>12 GOTO 1020
1000 R1=10+(I-.25)*(D(N)/(8*N))
1010 LOCATE 21,R1:COLOR 5:PRINT L$(I)
1020 IF Z$="L" GOTO 1070
1030 Y=360-(C(I)*54/G)
1040 XA=85+(D(N)*I/N)-(D(N)/(2*N))
1050 XB=82+D(N)*I/N
1060 LINE (XA,Y)-(XB,359),5,BF
1070 NEXT I
1080 IF Z$="L" GOTO 1210
1090 IF A$="N" GOTO 1400
1100 FOR I=1 TO N
1110 IF N>12 GOTO 1140
1120 RA=10+(I-.75)*(D(N)/(8*N))
1130 LOCATE 22,RA:COLOR 4:PRINT L2$(I):COLOR 2
1140 YB=360-B(I)*54/G
1150 XC=88+(D(N)*I/N)-(D(N)/N)
1160 XD=85+(D(N)*I/N)-(D(N)/(2*N))
1170 LINE (XC,YB)-(XD,359),4,BF
1180 NEXT I
1190 GOTO 1370
1200 '***** LINE PLOT *****
1210 XA=84+D(N)/N-D(N)/(4*N)
1220 Y=360-(C(1)*54/G)
1230 LINE (XA,Y)-(XA,Y),5
1240 FOR I=1 TO N
1250 Y=360-(C(I)*54/G)
1260 XA=84+D(N)*I/N-D(N)/(4*N)
1270 LINE -(XA,Y),5:NEXT I
1280 IF A$="N" GOTO 1400
1290 XA=84+D(N)/N-D(N)/(4*N)
1300 Y=360-(B(1)*54/G)
1310 LINE (XA,Y)-(XA,Y),4
1320 FOR I=1 TO N
1330 Y=360-(B(I)*54/G)
1340 XA=84+D(N)*I/N-D(N)/(4*N)
1350 LINE -(XA,Y),4:NEXT I
1360 '***** LABEL AXIS *****
1370 LOCATE 2,71:PRINT "KEY:"
1380 LOCATE 3,71:COLOR 5:PRINT "\\\\" "L3$
1390 LOCATE 4,71:COLOR 4:PRINT "\\\\" "L4$
1400 SYMBOL (160,30),C$,3,2,3
1410 SYMBOL (10,280),Y$,2,2,5,3
1420 SYMBOL (240,416),X$,2,1,5:LOCATE 25,10:COLOR 2
1430 IF INKEY$="" GOTO 1430 ELSE 1440
1440 PRINT "Do you want another plot? (Y,N)":INPUT A$
1450 IF A$="Y" OR A$="y" GOTO 250 ELSE CLS
1455 END
1460 PRINT "Data point(s) >10000. Re-enter data from start"
1470 PRINT :PRINT :PRINT :GOTO 340

```


end of Line 380 on Page 51 of the July '85 issue, implementing your assembly language statements — `cmp al,33h` through `mov al,4ch` — in the middle of Page 56 of the May '85 issue.

Even when flying with the aid of the version typed-in from the July magazine, one cannot obtain Radar by pressing the '<' key, as promised in the May magazine. Instead, one must press the comma key. But there is no key at all that will Center ailerons. The May article should not have promised that the '*' key would do it.

In fact, Sanyo's bottom row '*' key emits the same scan-code as IBM PC's bottom row '*' key, and this key activates "Recall," which returns the flyer to the beginning of his itinerary.

A flyer who wants to "Lower" his view on the IBM PC hits the ENTER key. To do it on the Sanyo, he must hit '1' on the numeric key pad. (On either keyboard, the "Raises" his view by hitting the top row BACKSPACE key.)

In order to apply the "Brakes," you must hit the period key on the Sanyo (not the '>' key). On the IBM PC, both symbols '>' and '.' are on one key.

If a reader of the July issue of SOFT SECTOR wants to type in a patching program that will enable him to Center ailerons by pressing the 'S' key, he can do so by typing 1F instead of the useless 37 for the 13th and 14th Hex characters on Line 390. Letter 'S' suggests flying Straight (or in view mode looking Straight down).

Rollin Bennett
Cresskill, NJ

TRICKS AND FIXES

Editor:

Thank you for the superb magazine! Truly the only computer magazine a Sanyo user needs. It is the only one in my house that gets read cover to cover within the same day it arrives. I especially enjoy the articles with "tricks and fixes."

Here is a simple trick to allow *WordStar* to come up already logged to Drive B:. Using COPY CON: (DOS 2.11), EDLIN or the 'N' mode of *WordStar*, create an AUTOEXEC .BAT file that looks like this:

```
DATE
B:
A:WS.COM
A:
```

This will automatically log the system to Drive B: while in *WordStar*, but will bring it back to Drive A: when you exit.

Another "nifty trick" is to display a menu selection in DOS. Create another AUTO EXEC.BAT file that contains the following:

```
DATE
ECHO OFF
CLS
TYPE MENU.TXT
```

Where MENU.TXT is a 24-line (1 page) file that has a heading and any number of menu selections labeled "1, 2, 3 . . .". Then create small batch files named 1.BAT, 2.BAT, 3.BAT, etc. that call your menu selections. For instance, I now type '2' and press ENTER in order to save typing DATASTAR B:CONTRIB. My batch file 2.BAT is one line: DATASTAR.COM B:CONTRIB, yet my menu asks if I want to "Post Contributions." So at the same time, you may make your system more user friendly.

David Shuman
Spokane, WA

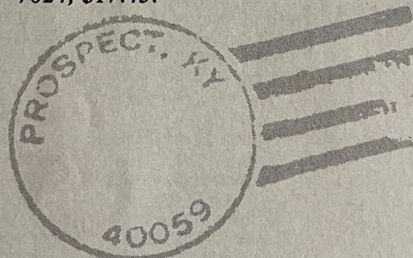
DESPERATELY SEEKING

Editor:

I want to comment on the famous "soon to be released book" by Fred Blechman. I cannot find it anywhere. I have been reading of its impending publication for six months now. Is it out or not, and where can I find it? I am ready to buy a copy of his manuscript! That's how anxious I am to get it. Please forward any information that you might have.

Mike Booth
Knoxville, TN

Editor's Note: The Sanyo MBC-550/555 Beginner & Intermediate Guide is currently available from Blechman Enterprises, 7217 Bernadine Ave., Canoga Park, CA 91307, (818) 346-7024, \$17.45.



REVIEWING REVIEWS

Editor:

As authors of the program *Prickly-Pear Datapack* (reviewed for SOFT SECTOR by Bill Chang), we want to express our appreciation for the reviewer's praise of a product that we are extremely proud of. It might be appropriate to add a few remarks:

- 1) "Limitation in report formatting" — To list records in a two-line format with blank lines between, use the "Write" instruction (with CON or PRN as arguments if the list should go to a screen or a printer). Remember that line spacing can be controlled using the carriage return literally ("") in the "Fields" instruction — possibly Mr. Chang felt that "Write" was useful only for file export but in fact it provides a useful adjunct to the "Output" instruction for non-columnar representations.

- 2) "Limitation in screen formatting" — Screens are very easily reformattable. The key here, as with reporting, is that the "Fields" instruction can totally redraw the screen form since any field can appear in any order: Field names can be replaced with literals, prompt messages or spaces, and carriage return literals ("") can force line adjustment. Also, the top, bottom, right and left screen margins are adjustable permanently using the customization program.
- 3) "Couldn't save a data set" — In other packages this might be necessary because their retrieval process is so slow. In ours, "Lookup" restores a data set directly from the current database with little extra trouble, so we felt an additional instruction would be redundant.
- 4) The comment about adding fields to a record is well taken, and we felt this feature was important enough to include in the program's "big brother," the *Ocelot Database Management System*.
- 5) "Read" cannot be aborted — This is a problem we should fix. But the generalization is incorrect: Other instructions, such as "Output," can be aborted, forcing a return to command level in the normal way. Also, "Read" does not have to be "one record at a time." "Update 2" with no assignments gets you into a mode where whole files are read at once, and no screen forms come unless a "nonvalid" record is encountered.
- 6) Finally, some mention is made of the "programming" extras (variable assignment, iteration and conditionals) that *dBASE II* and *Condor* possess. It's very relevant in this context to note that extensive options are available for programmers via *Ocelot's Database Management System*. Putting *Datapack* and the *DBMS* together (for a total price of \$450), one would have a far more capable package at both ends of the expertise spectrum. But *Datapack* should be looked at for what it is: a \$150 stand alone non-programmer's package, in which category it has no equal.

Again, I emphasize that I neither expect nor desire any modification in the review you are publishing: It's intelligent, and I enjoyed reading it. But if, as Mr. Chang says, he might purchase it for his own library, perhaps some of the above will enhance his appreciation or enjoyment of our products in the future.

Peter Gulutzan
President
Ocelot Computer Services, Inc.



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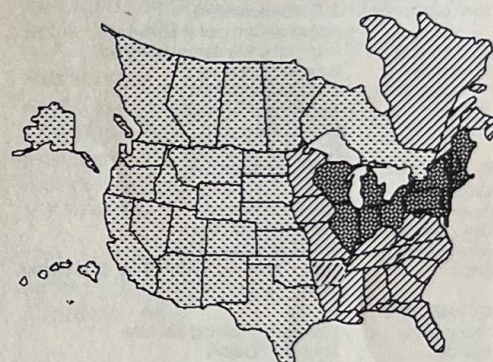
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A-OK Computers.....	39, 41	LaPlata Research.....	46
AA Computer Exchange.....	33	Level IV Products, Inc.....	50
Advent Products.....	54	MichTron.....	IFC, 16, 51
Alpha Bit.....	63	Michigan Software Distributors.....	59
BGW Systems.....	38	Olympic Educational Software.....	11
Bayou Technologies.....	37	Owl-Services.....	55
Block Marketing, Inc.....	24	Peripheral Products Distributing.....	66
Bluewater Software.....	64	Prickly-Pear Software.....	7
Chaucer Software.....	14	Rocky Mountain Micro.....	55
Chryson Computer.....	70	Sanyo.....	5
CompuSoft.....	61	Sanyo Canada.....	30
Comp-U-Type.....	42	Sanyo National Users Group.....	38
Computer Alpha Corp.....	8	Scottsdale Systems.....	9
Computer Associates, Inc.....	59	Soft Sector Binders.....	65
Computer Creations, Inc.....	19	Soft Sector On Disk.....	65
Computer Solutions.....	62	Software Answers.....	21
Computer Toolbox, Inc., The.....	3	Spectrum Solutions.....	42
Data Management Systems.....	37	Systems Peripherals Consultants.....	49
Diversified Computers.....	21	Tampa Bay Digital.....	58
FutureSystems.....	60	TW Tech.....	27
Greywolf Technologies, Inc.....	33	True Data.....	63
Hammer Industries, Inc.....	57	U.S. Digital Corporation.....	IBC
Harvard Associates, Inc.....	57	Wagner Brothers.....	58
James River Group, Inc., The.....	BC		

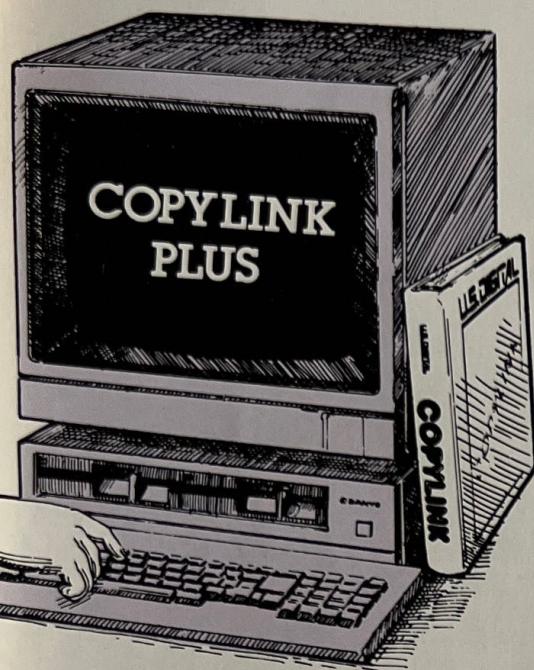


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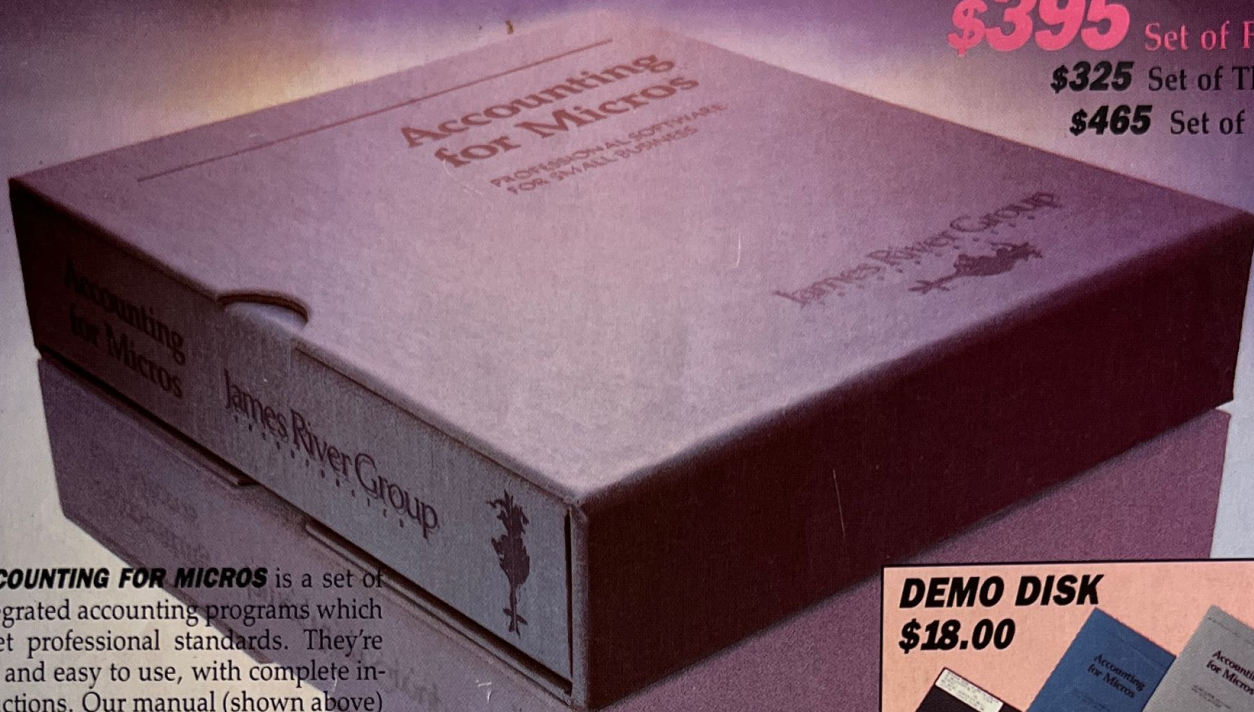
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